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ISAAC HAYS, M.D.,

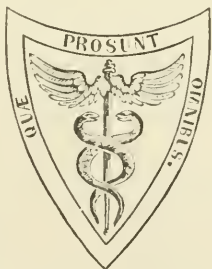
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE AMERICAN
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TO READERS AND CORRESPONDENTS.

All articles intended for the *Original Department* of this Journal must be contributed to it *exclusively*. The insertion elsewhere of *abstracts* of papers prior to the publication of the entire paper in this Journal is a violation of this rule. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

A number of original articles have been laid over for want of room. We must again ask the indulgence of our contributors, and assure them that their favours shall receive early attention.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of February.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent to the Editors*.

The following works have been received:—

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. LVII. London: Longmans, 1874.

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 The Boston Journal of Chemistry. Nov., Dec., 1874.
 The Laboratory. Sept., Oct., 1874.

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- XXXIII. The Complete Handbook of Obstetric Surgery: or Short Rules of Practice in every Emergency, from the simplest to the most formidable Operations connected with the Science of Obstetricy. With numerous illustrations. By Charles Clay, M.D., Late Senior Surgeon and Lecturer on Midwifery, St. Mary's Hospital, Manchester, etc. etc. From the third London edition. 12mo. pp. 328. Philadelphia: Lindsay & Blakiston, 1874. 241

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ART. I.—*Cerebral Rheumatism*. By J. M. DA COSTA, M.D., Professor of Practice of Medicine in the Jefferson Medical College, Philadelphia; Physician to the Pennsylvania Hospital.

THE occurrence of decided cerebral symptoms in acute rheumatism marks a variety of the disease which, for convenience, may be designated as cerebral rheumatism. The disorder is a perilous one, but one which is, as yet, very incompletely understood. That the subject is an obscure one, its history attests. For a long time regarded as an inflammation of the brain of rheumatic kind, it was held, and is still held by some, to be a metastasis to the brain, and text-book after text-book may be found to have repeated the statement how the joint affection will show signs of abrupt change as the disorder falls on the brain. Then its association with the heart trouble of rheumatism was thought, or is still thought, to furnish the key to the explanation of the nervous disturbance; and even in the late edition of his lectures, Sir Thomas Watson gives the weight of his authority to this view. Very recently, again, the association of the cases with high temperature has been noticed, and this symptom and its immediate belongings are, if we examine the journals of the day, looked upon as furnishing the clue to the explanation of the cerebral or spinal symptoms.

The disorder is not a frequent one, and has been chiefly commented upon in isolated cases. Whether from a distrust of results thus obtained, or from a real rarity of the affection, or whatever the cause, the medical journals and hospital reports may for years be searched in vain for any detailed records of it; and Dr. Frank Woodbury, to whom I am indebted for valuable assistance in the preparation of this paper for publication, has examined, without finding more than here and there an instance,

tens of years of the *British Medical Journal*, the *Lancet*, the *Archives de Médecine*, the *Medical Times and Gazette*, the *Bulletin de la Société Médicale*, the *Practitioner*, the *American Journal of the Medical Sciences*, the *St. Bartholomew's*, the *London*, and *Guy's Hospital Reports*, and a few other similar prominent and popular vehicles of professional thought. But for the last year or two more cases are finding their way into medical literature, and it may, therefore, not be an inappropriate time to inquire, in a connected manner, into the malady. Lange, in a series of careful statistics, shows the singular variations in a number of years; the lowest estimate was 1.3 in every 100 cases of acute rheumatism, while in some years the cerebral cases bore the proportion of 12.3 to 100. If this is to be anything like the proportion in which, in the near future, we are to meet with the dangerous complaint, it is an additional reason for its investigation.

Now, in describing the malady, I may at the threshold state, that I shall limit the term to cases in which the nervous symptoms are prominent, and appear to constitute the real features of the affection. Doubtlessly occasional restlessness, and even slight mental wandering at night, are not uncommon in decided cases of acute rheumatism at the height of the fever, and are the more likely to be found if there be a cardiac complication; but such transitory and subordinate phenomena do not make a disorder which we can call cerebral rheumatism. Nor is it quite in accordance with the results with which this paper deals, to speak of the disturbance as one complaint, when we shall find that several morbid states may contribute to it. Yet partly because the thread may be often traced uniting even these, and partly because it is a convenience, in examining into the clinical manifestations, to treat of all decided head symptoms of rheumatic fever as marking the cerebral type of the malady, I shall discuss it—at least for the present—as if it were a separate and perfectly well-defined morbid condition, pointing out certain readily recognizable differences as we proceed in the inquiry.

This may be taken as the general description: In the course of acute rheumatic fever, usually after it has existed for some time, or even after convalescence and among the first signs of a relapse, appear symptoms of cerebral disorder, manifesting themselves chiefly by restlessness, passing into stupor or coma, or becoming associated with delirium. The former combination is less common than the latter, and of much shorter duration. The delirium is preceded by wakeful, dreamy nights, is generally mild, and it is during the restless nights that it shows itself most plainly. Though it may be a continuous, it is scarcely ever a fierce delirium, and is not, as a very general rule, linked either to headache, injected eye, or vomiting. It may run a rapid course, delirium or stupor quickly ending in coma, coma in death. But ordinarily it goes on for days, the patient gradually mending or becoming weaker and weaker, and passing, per-

haps, into a condition very similar to that of typhoid fever, excepting that the bowels are constipated. The likeness to the enteric fever is heightened by the presence of sordes on the teeth, and the appearance of an eruption. The temperature is apt to be high, the joint-affection persistent, or even showing signs of increase; the breathing is rapid; the pulse frequent, compressible, and at times irregular. A cardiac difficulty may show itself distinctly as a complication, or again be wholly wanting. In some cases convulsions, in others local palsies, happen; or we may have hemiplegia even suddenly developed. But these features are rare; and it is in the wakefulness and restlessness, in the stupor and delirium, that we mostly find the signs of how decidedly the brain has become disordered.

Let me now cite a few illustrative cases. And I will first take one of *stupor*, which, I think, will go far towards explaining what is probably its most common and little suspected cause:—

CASE I. Acute rheumatism, with apparent convalescence; development of Bright's disease; occurrence of hebetude, passing into stupor; death, preceded by suppression of urine; autopsy.—Richard D., admitted into the Pennsylvania Hospital December 26, 1871; a ship-carpenter; age 25; unmarried. Two weeks before admission he was exposed to wet weather while at sea. Shortly afterwards he was seized with chilly sensations, followed by high fever and sweating, and the larger joints became successively tender and swollen, but not discoloured. He had never had gonorrhœa, nor an attack of rheumatism.

On physical examination a soft, systolic, mitral murmur was found. The urine contained no albumen; its sp. gravity was 1020. The axillary evening temperature was recorded at 103° ; the respirations at 24; the pulse 100. He perspired freely; his tongue was coated; and there was complete anorexia. The next morning the temperature was half a degree lower, the respirations 24, the pulse 104. The treatment consisted of the bromide of ammonium grs. xx, every four hours, and a Dover's powder at night.

Five days later he had greatly improved in general condition; the swelling had disappeared from the joints, but they were still tender. The cardiac murmur had become so faint as to be scarcely audible. Quinia, grs. viij, in twenty-four hours, had been added to the treatment two days before. It was now reduced to grs. vj daily. The bromide was also exhibited less frequently, grs. xx thrice daily.

A week later (toward the end of the fourth week of the disease) he was apparently almost well, the cardiac murmur was still faintly heard, but there was no swelling in any of the joints, he slept well, and passed water freely. The bromide was discontinued; the other treatment remained as before.

An unexpected change now occurred in the course of the disease. He had an attack of tonsillitis, which yielded soon to astringents. Yet he was very restless, and could not sleep at night; he had no headache, but complained of a constant pain in his loins—as, indeed, had been the case for some nights before the passing inflammation of the tonsils. The tongue became thickly coated; he had a troublesome diarrhœa, particularly at night, and lost his appetite. The face was waxy and œdematous, but the feet were not swollen. It was then ascertained that three nights before he

had, without permission, gone into the wash-room and bathed himself very freely.

On the evening of the 8th of January he complained to the nurse that he had passed no water during the day; a catheter was introduced, but no urine could be obtained. Dry cups to the lumbar region were ordered; also hot fomentations, and acetate of potassium in twenty-grain doses every three hours. There was hebetude, but he was not comatose, and had no convulsions. The skin was slightly dusky; there was no urinous odour, yet the whole aspect of the case suggested uræmic poisoning. His breathing became more laboured and rapid; but the pulse was not above 80; the pupils were dilated: and he died in a stupor, January 9th, after suppression of urine for a period of twenty-four hours.

Autopsy.—The examination was made twelve hours after death. There was considerable general œdema, but the body appeared otherwise in good condition. *Thorax*—Nothing abnormal was noticed in the lungs or pleura. The pericardium did not contain any excess of fluid. There was a distinct injection of the mitral valves, with a slight swelling of the free border of one of the leaflets, but the valves were free from any deposit, and were not irregular, roughened, or notably thickened. *Abdomen*—The liver was considerably enlarged and bronzed. The spleen measured six by eight inches, and was somewhat softer than in health. Nothing abnormal was noticed in the peritoneum or intestines. The kidneys were enlarged, and felt firm to the touch. The capsules were easily detached, and the cortical substance was red. When a section was made the substance was seen to be pale, and there was some exudation present. General irregular enlargement of the cortical substance at the expense of the pyramids was observed; indeed, the tubular element was much atrophied in one of the kidneys, and, in one place, had disappeared. A small amount of urine which was obtained was found to be highly albuminous, and to contain numerous granular casts. A section of the kidney was sent to the microscopist of the hospital, Dr. Jos. G. Richardson, who reported that “the fragment of kidney, in thin section, showed enlarged and congested Malpighian corpuscles, and uriniferous tubules choked up with desquamated epithelial cells, leucocytes, and much granular matter. The tubules were in many places distended and distorted, and even those which at first appeared comparatively healthy could generally, on tracing them out, be found obstructed at some part of their course. In one instance a small hyaline tube-cast was seen projecting from the ruptured extremity of a tubule.” The *brain* could not be examined.

This case is a striking illustration of the occurrence of cerebral symptoms after apparent convalescence. But it is chiefly valuable because it proves the lesion of the kidneys that may happen in acute rheumatism, and that did happen after the case had been actually some time under observation, for the first records show that the urine was healthy. Moreover, it shows in what manner exposure may act, and explains the occurrence of suddenly developed stupor passing into coma; and I suspect that nearly all of the so-called apoplectic instances of cerebral rheumatism, which have been placed on record, are of a nature which this case brings out, as indeed it suggests the explanation of many of the other nervous phenomena of the malady.

Here is another instance in which there was stupor as well as delirium, and in which the examination after death showed the kidneys diseased, but not the brain.

CASE II. Appearance of cerebral symptoms during a relapse of joint affection; stupor and delirium; urine albuminous, and found to contain granular and oily casts; autopsy.—Mary Mc., an Irish domestic, single, aged 25. Her general health had been always good, with the exception of an attack of acute rheumatism eight years before, which, although accompanied by cardiac pain and dyspnœa, was without sequelæ. Two weeks before coming under observation, her toe-joints became painful and enlarged, the disease then extended to the larger joints, involving them successively.

She was admitted to the women's medical ward of the Pennsylvania Hospital on Feb. 25th, 1871, when all the principal joints were found to be more or less affected. There was no cardiac pain, but the existence of tenderness was demonstrated when pressure was made over the apex. The first sound was prolonged and murmurish; the second sound rather abrupt. The tongue coated lightly; appetite poor; bowels were constipated; she slept badly.

She was ordered bromide of ammonium grs. xx every four hours, with a restricted diet.

The case progressed well, no complications occurred, the skin became moist, the tongue clean, and she seemed about to enter into convalescence, when on the 4th of March, the twenty-first day of the disease, the evening temperature advanced to 100.5° , and within the next few days the affection returned to the wrists and the knees, and the tongue again became coated. A mild delirium now appeared for the first time; she was noticed to be very imaginative and talkative, and to sleep very little. She was ordered (March 8th) to take at night forty grains of chloral hydrate with five drops of deodorized tincture of opium. The bromide was still continued, and on the next day five drops of tincture of digitalis were added to each dose, and compound cathartic pills administered. She was now quite dull, had considerable mental wandering, and was very sleepless; the heart's action became more forcible, and there was throbbing of the temporal arteries.

Two days later she was noted as having slept better, but her mind was more dull and her countenance stupid. The joint trouble was less marked, and she passed water freely. Her skin was sallow; tongue dry and glazed; pulse 112; respirations 36; evening temperature $103\frac{1}{2}^{\circ}$. She stated that she had no headache or cardiac pain. Physical examination demonstrated the absence of any increased area of cardiac dullness, or any signs of lung trouble. There was no distinct cardiac murmur; the slight alteration of the first sound previously referred to was still noticed.

Spt. of nitric ether was ordered in addition to the previous treatment.

The next few days she became more dull; the pupils were sluggish and somewhat dilated; there was no injection of the conjunctiva; the tongue was still dry and red, and bore white crusts upon it. The evening temperature was 102° (March 12th). There was no change in the heart-sounds, but there was percussion dullness at the base of the left lung posteriorly, without bronchial breathing; anteriorly the lungs were clear. The urine was voided involuntarily in the bed, and the quantity of it was small. She had been receiving some stimulant, but it was now increased to one

ounce of whiskey, in punch, every three hours. The former treatment was suspended and acetate of potassium grs. xx ordered every three hours, and a blister was applied to the nape of the neck. No chloral had been taken since the 11th.

On the 13th of March, the thirtieth day of the disease, the cardiac impulse was noticed to be somewhat jerking in its character. No murmur could be detected, but at the left base one of the sounds was followed by a little irregularity as if due to a slight pericardial roughening. Pulse 120 and very compressible. The joint affection still lingered on the right side, but had entirely disappeared from the left half of the body. She had now become duller and almost comatose, the alæ nasi were widely dilated; she had almost entirely lost the power of swallowing, and could only take her medicine by drops. The urine was passed in the bed but not freely, that taken from the bladder contained about one-sixth albumen, and under the microscope showed tube-casts containing epithelium in an advanced stage of fatty degeneration. She died the same evening.

Autopsy.—The examination was made eighteen hours after death. The body was fairly nourished and the rigor mortis well established. *Thorax*—Each pleural cavity contained about a pint of clear fluid. There were no evidences of recent inflammation, the lungs were somewhat congested posteriorly. The heart was rather larger than normal, but otherwise appeared healthy; both ventricles were distended with large recent clots. *Abdomen*—There was apparent incipient fatty degeneration of the liver, but it was not very marked. The kidneys were large and pale though somewhat congested, and the existence of fatty degeneration was demonstrated by the microscope. The spleen and intestines were apparently normal. *Encephalon*—The large venous sinuses were moderately full of dark blood. The membranes were carefully examined, but showed no evidence either of congestion or any product of inflammation. The substance of the hemispheres appeared absolutely healthy, the puncta were not abnormally numerous nor very distinct. The lateral ventricles each contained about a drachm of serous fluid. There was no evidence whatever of any lesion within the cranium. An examination of the blood for urea by Dr. Hare gave negative results.

These cases show then a remarkable coincidence in some of the symptoms, and tell us in what direction we are to look in instances of stupor, or stupor and delirium, arising in the course of cerebral rheumatism, before we seek for the explanation elsewhere.

Cases in which delirium alone occurs may be, but are not so apt to be, referable to the same category. That no urea was found in the blood in the second of these cases is no proof that the symptoms were not largely uræmic; for recent experiments have clearly demonstrated how the morbid manifestations of uræmia may happen without urea accumulating in the blood.

As another instance of cerebral rheumatism, chiefly marked by stupor, I subjoin this case, which (though, owing to the limited character of the autopsy that alone was possible, it cannot be here adduced as a proof of what I suspect is the most common cause of a group of the disorder

mainly characterized by stupor and coma) is valuable on account of the absence of heart lesion, and of the minute examination of the brain.

CASE III. Occurrence of stupor in the course of mild acute rheumatism; no heart trouble; autopsy; microscopical examination of the brain.—Maria D., domestic, single, age 40, born in Ireland, was admitted to the women's medical ward, Pennsylvania Hospital, on the 23d of April, 1872, with a mild attack of acute rheumatism, which began ten days before admission, and was not her first attack. There had been no cardiac trouble, and the articular affection was mild. The intelligence of the patient was naturally feeble.

Bromide of ammonium was ordered, as in the preceding cases, in twenty-grain doses every four hours, and she was placed upon a light nutritious diet.

Four days after admission she was noticed to be drowsy and dull, and when roused would slowly answer questions and immediately relapse into a stupor. She refused to swallow, but there was neither spasm nor vomiting. A blister was applied to the back of the neck, but without improvement becoming manifest. No special change in the joint affection was observed. The next day the pupils were noticed to be contracted, and did not react. The head was not retracted; the pulse was small and very compressible; there was some throbbing of the carotids. The act of swallowing was accomplished with great difficulty; she had some cough. A few doubtful reddish spots were seen upon the abdomen. The urine was passed involuntarily, and an attempt to collect it, for examination, was unsuccessful. On physical examination the action of the heart was found to be accelerated, but no murmur was evident. Anteriorly the lungs were clear, but the right lung was somewhat dull posteriorly, and the respiratory murmur was fainter than upon the left side. The patient died the same evening (April 29th), six days, therefore, after her admission into the hospital.

Autopsy made thirty-six hours after death, the brain only being examined. The meningeal vessels seemed congested, but the brain substance was firm, pale, and anæmic; the circle of Willis was distinct; the arteries at the base contained soft coagulated blood, but nowhere were found any firm clots, or evidences of inflammation of the walls of the vessels, except a faint, unequally-distributed pinkish blush, most marked at the points of greatest accumulation of the soft clots mentioned, which, before it was closely inspected, was thought to be due to staining from hæmatin.

After hardening in alcohol, a portion of the brain was examined microscopically by Dr. Richardson, who reported that "the specimen sent does not exhibit any changes indicating organic disease, although the unusual abundance of red disks in the arterioles and capillaries evidence a decided congestion of the organ. This congestion is still more manifest in the choroid plexus, where many leucocytes appear to have wandered out of the vessels into the surrounding tissue; not, however, in sufficient quantity to constitute an effusion of pus, but only to cause a slight cloudiness of the membrane."

I have already alluded to the kind of *delirium* usually met with. It is not violent, and is rarely associated with headache; but the restlessness that attends it is extreme, and often the patient will have to be restrained from fulfilling his chief desire—to get out of bed. It is generally worse at

night; and sometimes has a strange hysterical semblance. This case showed it markedly, and is also interesting on account of the lesion found in the vessels of the brain.

CASE IV. Marked delirium of hysterical type; absence of headache and high temperature; long duration of case; autopsy; occlusion of finer vessels of brain by plugs—Helen F., a seamstress, widow, age 30, born in America. She had had an attack of acute rhenmatism eleven years before, from which she recovered without any sequelæ. The attack for which she was admitted to the hospital, Jan. 18th, 1872, began insidiously four days before. The knee and wrist-joints were soon involved, and there was considerable fever. The joints indicated were very tender to pressure and upon motion, and were swelled, but not discoloured. The left ankle was also implicated, and like the others was enlarged but not red. The tongue bore a whitish coating; the bowels were constipated. The treatment ordered was bromide of ammonium twenty grains every three hours.

The next morning the pulse was 84, temperature $101\frac{1}{2}^{\circ}$; in the evening the pulse was 88, and the temperature $101\frac{1}{2}^{\circ}$.

The patient was noticed to possess a highly hysterical temperament. The cardiac sounds were feeble, and the first sound was murmurish; she did not complain of precordial pain or tenderness. The urine was turbid from urates, of acid reaction, specific gravity 1034, and did not contain albumen; the total quantity passed in twenty-four hours was forty ounces.

20th, A. M., pulse 84, temp. 99° ; P. M., pulse 92, temp. $101\frac{1}{2}^{\circ}$. 21st, A. M., pulse 88, temp. 99° ; P. M., pulse 84, temp. $101\frac{1}{2}^{\circ}$. The disease now extended to nearly all the remaining joints, involving them in succession; those first attacked had become less painful. For the first time a faint systolic cardiac murmur was heard over the apex.

Three days later the urine was again measured, and the quantity voided in twenty-four hours was found to be $\text{f}\overline{3}\text{xxxij}$, the specific gravity had fallen to 1022, but the increase of urates persisted, and there was still no albumen. The general condition was then more comfortable; the cardiac murmur was very indistinct, and her chief complaint was of muscular soreness. The evening temperature was only 99° ; the pains had almost entirely disappeared; there was no cardiac murmur, and the patient appeared January 29th to be convalescent.

On Feb. 3d a curious mental state was observed. She was seemingly well, but very fidgety, and when only partly aroused there was mild, good-natured, mental aberration, which would disappear as her attention was strongly attracted, and, when formally questioned, she gave rational replies. The pulse ranged from 80 to 90; no fever or other constitutional affection was noticed. She did not complain of headache; the pupils reacted well, but were slightly larger than usual; there was no vomiting. She fancied that she was in the bed of some one else, and constantly endeavoured to return to her own. The treatment was changed by adding tincture of *cannabis Indica* to the bromide.

Two days subsequently, the 5th of Feb., the delirium was more marked; the previous treatment was suspended, and full doses of opium were ordered.

Feb. 10. She seemed somewhat relieved, and was taken before the class. She there became very hysterical, weeping and troubled. The skin was cool, there was no headache nor vomiting, nor lesion of heart or lungs.

She was so strikingly hysterical that before the class the point most insisted on was the hysterical nature of the delirium in connection with acute rheumatism. The joint trouble had wholly subsided, and the urine was free from albumen and not otherwise abnormal. She was directed to be placed upon a generous diet, to which a little stimulant was added, and to have deodorized tincture of opium, twenty drops, at night.

No change occurred during the subsequent week. She still had nocturnal delirium, chiefly manifested in attempts to get out of bed. During the day she lay in a half-stupid condition, whining occasionally, while at other times there was low muttering delirium. She refused food and medicine, gave no warning of the movements of her bowels, which were frequently disturbed, and voided the urine in bed. When addressed, signs of attention were shown, and her reply, though slow and indistinct, was rational. The pulse was 112; there was some cough; the skin was cool, and the face slightly flushed. There had been recurrence of the joint affection, chiefly in the left wrist and fingers.

During the succeeding week, the fifth of the disease, she became quieter and more stupid, and progressively weaker and thinner. She began to swallow a little better, however, although she took nourishment with difficulty, and had to be propped with pillows to prevent her from falling out of bed. She was getting now $\text{f}\frac{3}{4}\text{vij}$ of whiskey daily.

The area of cardiac dulness was not increased, and there were no endo- or pericardial murmurs; the first sound was short, the second distinct; the pulse was compressible; the diarrhoea had ceased, but she had emaciated rapidly during the preceding two weeks. There was no paralysis, and she slept well with an opiate.

She was more restless during the next week. The urine was still passed in bed, but the bowels were constipated. She was not able to project the tongue further than the teeth, when requested to show it. Pulse 100, and the skin felt dry and hot. The pupils were about the normal size, but now responded very sluggishly to light. There were no evidences of any cardiac lesion. A dropping of the upper eyelids now was noticeable, and was accompanied by a thick secretion which collected about the canthi, probably connected with a tarsal ophthalmia which she had had for several weeks. The skin of the forehead seemed bluish and had a drawn appearance; the forehead looked large. Tickling of the extremities gave rise to no reflex movements, but no paralysis existed. The head had not been retracted at any time, and no pain was produced by bringing it forward; this was tried on several occasions. There had been no complaint of headache at any period in the history of the case, and the temperature did not go above 101° . The variations between the morning and evening temperature were scarcely ever above half a degree, as the record proves. 21st, P. M. 100° ; 22d, A. M. 100° , P. M. 100.5° ; 23d, A. M. 101° , P. M. 100.5° ; 24th, A. M. 101° ; 27th, A. M. 99° , P. M. 100° ; 29th, A. M. 100° , P. M. 100.5° .

During the eighth week the treatment was principally nourishment. A blister was applied to the nape of the neck, but the opium was suspended.

March 2. At the beginning of the ninth week she died exhausted and in a comatose condition.

Autopsy.—*Thorax*—No pleural effusion existed; a few old adhesions at the right apex were found, but nowhere else; the lungs were normal; the heart was of the usual size and its substance firm. Some congestion and thickening of the mitral valves existed, but no exudation or roughening;

the tricuspid were normal. In the endocardium of the left auricle, about half an inch above the valvular insertion, were a few minute granular points, occasioning a slight roughening of the membrane. *Abdomen*—The liver and kidneys were normal; the spleen was unusually small, it contained no embolic patches. *Encephalon*—The dura mater was normal, save a slight fulness of the large vessels. No effusion or pus, nor appearance of exudation or opacity, was found either at the base or on the convexity of the hemispheres; there was no subarachnoid effusion; the vessels of the pia mater were deeply injected, but there were no signs of exudation. Some of the small arterial branches towards the convexity of the brain, which presented the appearance of being plugged at several points, were retained for microscopic examination; the arteries forming the circle of Willis were full of blood, but had not the knotted appearance shown by the other arteries; the brain-substance was firm and apparently normal; the puncta vasculosa were numerous and distinct in the white substance; the gray layer was perhaps thinner, but neither redder nor paler than usual; there was no gross appearance of softening. Part of the brain being sent to the microscopist, Dr. Richardson, he reported: "Careful microscopical examination of the portion of brain sent me fails to reveal any organic changes. The walls of the bloodvessels (although containing more blood corpuscles than usual) appear quite healthy, and the nerve-cells of the gray matter, as well as the nerve-fibres of the white substance, present no abnormal aspect." The vessels of the choroid plexus were very full; on the left side there was a fusiform distension of a vessel which had the appearance of a small aneurism; another was found on the right side. No effusion existed in either ventricle, nor was the surrounding brain-substance softened. The optic thalami and corpora striata were normal in appearance. The third and fourth ventricles and the nerves at the base of the brain were apparently healthy. The vessels around the medulla were injected, but there was no exudation. The distended appearance of the vessels of choroid plexus was found, on examination, to be due to an effusion between the vessel and its sheath. The vessels coming from some of the smaller divisions of the middle cerebral arteries on both sides, examined with reference to their knotted appearance, were found to be occluded by fibrinous plugs, which was confirmed by microscopic examination.

Here is certainly a case of very great interest, alike in its symptoms and as throwing light on their cause. The absence of renal, and I may say even of cardiac trouble, makes the record a very pure one of cerebral rheumatism with a definite lesion. Were the plugs washed into the brain? Or did they form in its finer vessels? I am inclined to think the latter. There was really no disease of the heart, for the granular exudation above one of the cardiac orifices mentioned in the record of the autopsy was not marked—a mere trifling roughening of the membrane, from which nothing could have been washed away.

One of the recorded symptoms of this case demands a word of explanation. It is the remark about the face. I have never seen the expression here referred to excepting where there was organic trouble within the cranium, and I do not recall that I have ever encountered it excepting in cases that have ended fatally. The forehead appears to have grown in

size and width, it looks so large and the skin seems drawn more tightly over it, and may have even a slightly bluish cast. The eyes are apt to be sunken. This physiognomy here alluded to as occurring in a case of cerebral embolism or thrombosis, I have also met with in simple and in tubercular meningitis, and in cases of acute softening.

The examples of cerebral rheumatism we have been hitherto studying are marked by an absence of heart disorder, and are, therefore, in themselves of some value as deciding that the head symptoms of acute rheumatism are not simply due to a cardiac complication. I shall now bring forward a group in which there was disease of the heart, though the cerebral symptoms threw those of the cardiac malady into the background, and were not, I think, wholly owing to them.

CASE V. Acute rheumatism with pericarditis; restlessness and delirium; recovery.—Patrick D., admitted into the hospital January 3d, 1874, a hotel-porter, thirty years old and unmarried. He had had an attack of rheumatism nine years before. The present one began four days prior to admission, after exposure to a draught while overheated. Fever and thirst had been present from the commencement, and all of the large joints had been affected, although when first seen he complained most of pain in his knees, which were puffy and tender, but not markedly red. Pulse 96, respirations 24, and temperature 101° . The urine was of an amber colour, acid, specific gravity 1018, and did not contain albumen. Twenty grains of bromide of ammonium were ordered every second hour, and infusion of digitalis; also four ounces of whiskey in milk-punch daily.

The examination of the heart showed somewhat increased percussion-dulness dependent upon a moderate amount of pericardial effusion. The impulse was weak, and the pulse seemed weak when contrasted with the stalwart appearance of the man. His general condition for some days remained the same, and is thus noted:—

Jan. 4, A. M., pulse 84, resp. 24, temp. 101° ; P. M., temp. 102° . *5th*, A. M., pulse 92, resp. 30, temp. 101° ; P. M., pulse 100, resp. 30, temp. 102° . *6th*, A. M., pulse 84, resp. 18, temp. 98° ; P. M., pulse 84, resp. 24, temp. 102° . *7th*, A. M., pulse 80, resp. 24, temp. 100° ; P. M., pulse 80, resp. 18, temp. 100° . *8th*, A. M., pulse 80, resp. 30, temp. 100° ; P. M., pulse 84, resp. 24, temp. 101° . *9th*, A. M., pulse 86, resp. 24, temp. 100° , some congestion at base of left lung. *10th*, A. M., pulse 90, resp. 24, temp. 99° ; P. M., pulse 96, resp. 30, temp. $97\frac{1}{2}^{\circ}$. *11th*, A. M., pulse 84, resp. 30, temp. $97\frac{1}{2}^{\circ}$; P. M., temp. 98° . *12th*, A. M., pulse 84, resp. 24, temp. 100; P. M., pulse 90, resp. 30, temp. 100° .

12th. A blister was ordered over the heart, and the infusion of digitalis was increased to one drachm thrice daily; an opium pill was directed to be given p. r. n. The bromide was discontinued, but the whiskey (*fʒiv*) was kept up, and twelve ounces of beef-tea added to the treatment. There was impaired resonance at the lower part of the left lung with a number of coarse râles. First sound of the heart was very faint and both sounds were feeble; it was observed that he talked in his sleep.

13th, A. M., pulse 104, resp. 30, temp. $99\frac{1}{2}^{\circ}$; P. M., pulse 96, resp. 36, temp. 103° . The patient was worse; there were some moist râles over the left lung posteriorly; there were fine râles and faint friction at the lower part of the right lung; both lungs were congested. He com-

plained of oppression in the chest, and his breathing was rapid. First sound of the heart was feeble, and there was a faint murmur; the pulse was compressible and of moderate volume. The change in his condition was attributed to his getting out of bed. Dry cups were directed to be applied over both lungs; and acetate of potassium, twenty grains every three hours, was given.

14th, A. M., pulse 98, resp. 38, temp. 103° ; P. M., pulse 108, resp. 36, temp. 103° . 15th, A. M., pulse 92, resp. 24, temp. $99\frac{1}{2}^{\circ}$; P. M., pulse 94, resp. 30, temp. 101° . Slight mental aberration was noticed, but there was less fever; the heart sounds were more distinct, and the pulse had more volume.

16th, A. M., pulse 92, resp. 30, temp. $99\frac{1}{2}^{\circ}$; P. M., pulse 80, resp. 24, temp. 102° . His general condition was much improved; there was a little more strength in the cardiac impulse. The urine was strongly alkaline, specific gravity 1030, and loaded with urates.

17th, A. M., pulse 78, resp. 24, temp. $98\frac{1}{2}^{\circ}$. All the joints were free from pain, but the tongue was still coated and he was restless at night. The acetate of potassium was reduced to ten grains thrice daily, and the next day entirely discontinued. Six grains of sulphate of quinia were directed to be given daily.

18th, A. M., pulse 78, resp. 20, temp. $97\frac{1}{2}^{\circ}$; evening temp. $98\frac{1}{2}^{\circ}$.

The next day there was incoherence of speech and the patient appeared dull; the tongue was pasty, the appetite poor. The whiskey was increased to six ounces, and the quinia to grs. viij daily.

19th, A. M., pulse 70, resp. 18, temp. 97° ; P. M., pulse 70, resp. 18, temp. 97° .

20th, A. M., pulse 60, resp. 18, temp. 97° ; P. M., pulse 60, resp. 18, temp. 97° . The infusion of digitalis was now stopped, and the whiskey was increased to eight ounces. The second sound of the heart was much more distinct, it was so even towards the apex, but the first sound remained feeble. There was still mental wandering, and he got out of bed at night without seeming to know what he was doing. His delirium was nearly constant but quiet and good natured, and though once or twice when pressed to do or take things, he expressed resentment and a determination to make short work of the attendants, he did so with the air of a man obliged to perform a painful duty. There was no stiffness or pain in any of the joints, but the tongue was heavily coated and some sordes on the teeth were noticed.

From this time he steadily recovered, the heart-sounds became more and more distinct, and the percussion-dullness declined to the normal area. He was discharged on the 2d of March, after he had been well for several days, and been acting as assistant in the ward. I have since heard of him as having grown very stout and being as vigorous as ever.

The next case I only investigated on admission. Its marked features happened while under the care of my colleague Dr. Aitken Meigs; and case VII. I saw with another colleague, Dr. Hutchinson, by whose permission I here record it. The time at which I examined it was while the pericardial effusion was most marked, and the question of tapping arose. But we decided against it on the ground of the collection of fluid being too small, and that it was not from pressure on the heart that the dangerous symptoms had arisen.

CASE VI. *Acute rheumatism with endo-pericarditis; delirium; stupor, but absence of headache; autopsy*—A widow, age 24, born in New Jersey, was admitted May 9th, 1873, after suffering for a week from pain and swelling of the wrists and knees, with considerable fever. She had had no treatment before coming to the hospital excepting rest in bed. Frame small; skin sallow; general condition impoverished; action of the heart rather accelerated, and a decided mitral murmur, blowing in character and systolic in time; axillary temperature $103\frac{1}{2}^{\circ}$; urine was strongly acid, specific gravity 1024, containing albumen, but no casts, says the note recording her state. The treatment instituted was bromide of ammonium, grs. xx, every three hours, with morphia, hypodermically, at night. The joints were wrapped in cotton wadding. Flying blisters were applied over the heart. The joint affection slowly subsided in the course of the next two weeks, but the heart became more irritable, a marked friction sound was evident, and she complained of pain in the cardiac region. She had been using tincture of digitalis, ten drops, three times daily without much apparent effect. This was suspended on the 22d and tincture of aconite root, two drops thrice daily, exhibited.

On the 24th of March, the twenty-third day of the disease, she became delirious at times, and tried to get out of bed. She talked incoherently and could not be roused so as to answer intelligibly; complained principally of cardiac pain; no headache was noticed. The aconite was cautiously increased to twenty-four drops daily, but without checking the rapidity of the heart's action, and veratrum viride, afterwards substituted, proved equally inefficient.

Stimulants were added to the treatment, and on May 30th the bromide was discontinued and carbonate of potassium, grs. x, given every three hours. The tongue became dry, brown, and fissured, and she gradually sank into a stupor, in which she died June 17th.

Autopsy made fourteen hours after death. Rigor mortis well established; considerable suggillation posteriorly. *Thorax*—No effusion in the pleural cavities and no adhesion. Lungs normal; the pericardium adherent throughout, being connected by a mesh-work of recent lymph. Heart about the normal size, and the ventricular walls of the usual thickness. The mitral valves were thickened and had a few moderate-sized vegetations upon the free border. The tricuspid valves were, at first sight, pronounced normal, but, upon examining their substance between the fingers, small angular bodies were found to be imbedded therein. The semilunar valves were healthy and competent. The abdominal viscera were normal; the kidneys were not microscopically examined. An inspection of the brain was not permitted.

CASE VII. *Acute rheumatism with pericarditis; delirium; muscular tremours; gradual sinking; autopsy*.—Ida H., æt. 22, married, born in Philadelphia, was admitted to the hospital Dec. 23, 1873, under the care of Dr. Hutchinson. She had always had good health until the present attack, and was free from any hereditary tendency as far as she knew. Five weeks before admission, after getting her feet wet while scrubbing, she had severe pain in her knees accompanied by swelling and fever. From the onset of the disease, she had been confined to bed and all the large joints had been successively affected, the disease pursuing the course of an ordinary attack of acute rheumatism of some severity but without complications.

When admitted all the large joints were painful, moderately swollen, and extremely sensitive. The area of cardiac dulness was somewhat increased

and the sounds were slightly muffled, but there was no murmur. She was feverish and had frequent sweats; the tongue was coated; the pulse 120, and the evening temperature 101°. The urine was acid, specific gravity 1028, and did not contain albumen; it was loaded with urates.

She was ordered twenty grains of acetate of potassium every second hour, and infusion of digitalis, a drachm every third hour. Pericardial friction of small extent was developed during the succeeding week; otherwise the case progressed well.

The treatment was modified on the 24th by the addition of six grains daily of quinia; afterwards, on the 27th, the acetate of potassium was discontinued on account of diarrhœa, and the bromide of ammonium was substituted. Three ounces of whiskey, daily, were ordered on the 26th.

On the 30th the morning temperature was 100°, and the pulse and respirations 80 and 24 respectively, the joints were not so painful, the tongue was cleaning, the bowels were open, the pulse was stronger, and the pericardial friction-sound less distinct than on the day preceding.

The succeeding day she complained of more pain in her joints, but the pericardial dulness was evidently diminishing, and the heart-sounds were becoming more distinct. The bromide was ordered to be discontinued, as she again had an attack of diarrhœa. A mental dulness was now noticed for the first time, and was thought to be due to the opium which had been given at night to relieve pain and procure sleep. Pulse very feeble, and intermitted occasionally. A few sonorous râles were heard in the chest posteriorly.

Jan. 1, 1874, pulse 128, resp. 20, and temp. 100°, in the morning; and in the evening, pulse 132, resp. 32, and the same temperature. There was active delirium during the preceding night, with attempts to get out of bed and marked trembling of the muscles in the morning, with intense pain in the knee; the tongue was heavily coated. She was ordered bromide of potassium at night, and five drops of dilute muriatic acid with ten of turpentine to be given every second hour; the digitalis was suspended, but the quinia continued.

The next day the tongue was not so dry, and the muscular tremours, which in truth had been gradually coming on for some days, were less marked. A. M., pulse 120, resp. 22, temp. 99°; P. M., pulse 128, resp. 40, temp. 101°.

On the 5th it was noted that the temperature was 102°, the wandering and restlessness were decided, especially at night. There was no increase in the pericardial dulness or effusion. The acid and turpentine mixture was stopped on the 3d, and the digitalis and bromide of ammonium resumed, but were again discontinued this day. She was directed to take five grains of Dover's powder every three hours, night and day, the quinia was continued and the stimulant increased to eight, and on the 6th, to ten ounces daily.

Two days later there was but little change in the patient's condition; tongue still pasty but moist, mind dull, pulse feeble and irregular, and the heart-sounds rather more distinct.

From this time she gradually sank, the pulse became less frequent and distinctly intermittent; the mind continued dull, until the 14th, when death occurred.

The temperature records of the last week were: Jan. 6, A. M., pulse 82, resp. 24, temp. 101°; P. M., pulse 116, resp. 24, temp. 103°. Jan. 7, A. M., pulse 134, resp. 32, temp. 101°; P. M., pulse 140, resp. 24,

temp. 103°. Jan. 8, A. M., pulse 128, resp. 28, temp. 102°; P. M., pulse 132, resp. 28, temp. 100°. Jan. 9, A. M., pulse 132, resp. 28, temp. 100°; P. M., temp. 101°. Jan. 10, A. M., pulse 140, resp. 32, temp. 101°; P. M., pulse 140, resp. 24, temp. 102°. Jan. 11, A. M., pulse 120, resp. 20, temp. 101°; P. M., pulse 100, resp. 28, temp. 102°. Jan. 12, A. M., pulse 130, resp. 40, temp. 101°; P. M., pulse 135, resp. 44, temp. 102°. Jan. 13, A. M., pulse 108, resp. 36, temp. 101°.

Autopsy, twenty-two hours after death, showed the lungs free from disease, and normal except some hypostatic congestion. There were no pleural adhesions. The blood was fluid and dark-coloured. The cardiac valves were healthy, and sustained the hydrostatic test; a small, white fibrinous clot was found attached to one of the aortic leaflets. In the pericardium about three ounces of fluid were found; the visceral layer of the pericardium was dotted here and there with ecchymotic spots, and at one or two points were small patches of whitish lymph. The abdominal viscera were healthy. The brain was anæmic, the veins engorged, but no clots were seen in any of the vessels, and no inflammation or thickening of the membranes existed.

Now, as regards the cardiac phenomena in these cases, they were not so striking that it seems possible through them alone to account for the head-symptoms. Doubtlessly they acted as favouring elements, by the weakening of the circulation they occasioned, and by disturbing the regulated supply of blood to the head. In one of them, and in which, moreover, there was albuminous urine, the products of the endocarditis may have found their way into the blood, and thus produced certain changes which favoured the development of brain disorder. But I think that in any case there is something more needed than a mere disturbed circulation to occasion such marked signs of disturbance. There is either a coincident action of the rheumatic disease on brain and heart, or such changes in the blood produced by the cardiac affection pouring its results into the circulating fluid as will lead to local disorder in the brain. Of course pericarditis cannot do this, and only severe instances of endocarditis would be at all likely to do it.

Thus far in examining the character of the cerebral symptoms we have been chiefly concerned with the restlessness, the stupor, and the delirium. The usual absence of headache and of vomiting too has been mentioned. Now in some cases, not in many, there is marked tremour, one-sided or double-sided; or spasmodic contractions of the muscles, especially of the face; or one-sided facial palsy or hemiplegia. The pupils are always apt to be small, and, whether small or not, very sluggish. Some of these points are made manifest by the following two cases:—

CASE VIII. *Restlessness and hysterical manifestations preceding stupor; headache; spasmodic contraction of facial muscles; coma; temperature before death 108½°.*—Susan McG., Irish domestic, single, age 24. Four weeks before admission she had been confined to bed with a transitory sickness, which she attributed to exposure to cold and wet. After a few days, however, she resumed her occupation and continued at it for a

week ; then, according to her account, had pain and stiffness in knees, but her joints were not red nor discoloured, nor had she fever, but she felt weak and unequal to exertion. Twelve days before admission the ankles became red and swollen ; subsequently all the large joints were invaded in succession, the disease being very migratory. She had received no special treatment.

When admitted into the hospital, March 4, 1872, all the large joints were affected, particularly those on the left side. Although she stated that she had perspired freely during the preceding week, the skin was not moist, and her face was flushed and bore an expression of great distress. She slept poorly, which she attributed to the pain of the joint affection. The tongue had a white coating ; the appetite was poor, and the bowels were rather constipated. There was no cardiac murmur, but the first sound was duller than normal. She was placed upon the bromide of ammonium, grs. xx, every four hours, with a Dover's powder at night.

On the 8th, the pulse in the morning was 108, and temperature 101° ; in the evening pulse the same, but temperature had declined to $100\frac{1}{2}^{\circ}$. The pains were much less, and there was no cardiac murmur.

During the next week, the beginning of the third week of the disease, she remained in about the same condition ; the pulse varied from 84 to 100, and the temperature was not higher than $100\frac{1}{2}^{\circ}$; there being sometimes no difference between morning and evening, though the latter usually—not invariably—was higher, by about half a degree. The articular trouble subsided, so that the joints were neither swollen nor tender. The tongue was still coated ; skin dry ; appetite poor ; bowels moved once daily. She had no headache, and the mind, March 16th, was noted as perfectly clear. The evening temperature now marked 101° , and she complained of pain in her shoulders and wrists.

On the 17th, pulse 120 in the morning, and temperature $100\frac{1}{2}^{\circ}$, but in the evening pulse 108 and temperature 102° . She complained very much of the pain in her upper extremities, at times crying out in a hysterical way. She derived great relief from half a grain of sulphate of morphia given hypodermically morning and evening.

The next morning the pulse was 120, but in the evening it was 108, and the temperature had gone up to 103° . This evening (the 28th) she began to complain of her head, occasionally crying out with pain, but generally she was dull and drowsy.

On the 19th, the morning temperature was 103° , in the evening it had gone to 103.5° , the pulse at each observation was 120. She now relapsed into complete stupor, from which she could not be roused either to reply to questions or to take her food. She passed her water in bed. The pupils were small and sluggish. No cardiac lesion could be detected.

A blister was directed to be applied to the back of the neck, and twelve ounces of whiskey ordered to be given, daily, in milk-punch.

The following morning, pulse 136 and temperature 105° ; pulse in the evening 160, but temperature unfortunately was not obtained ; pulse very irregular, varying forty beats in an hour ; heart's action feeble, and a faint systolic murmur audible at the apex. Face rather flushed, and there are occasional spasmodic contractions of the facial muscles with twitchings of the eyelids. The pupils quite small and reacted very slowly ; no strabismus ; respirations at times prolonged and sobbing. She had now ceased to cry out, and was quite unconscious. The head was not retracted, but there were occasional undulatory motions of the body, with tossing of the arms. The skin was moist ; the bowels were constipated, and the urine

was still passed in bed. She was ordered acetate of potassium grs. xx, every three hours, and a large turpentine enema. In spite of the treatment, however, she continued in the same condition until the following morning, when she died, the temperature before death being 108.2°.

An examination was refused, but the urine remaining in the bladder was found to contain a large proportion of albumen; no tube-casts, however, were found after a careful search.

CASE IX. *Cerebral rheumatism with delirium and one-sided facial palsy; slight motor paralysis of muscles of arm and leg, same side; gradual and complete recovery.*—I saw late in May, 1870, with Dr. Dunton, in Germantown, a lady of sixty, in whom curious mental symptoms had developed themselves in the course of subacute rheumatism. She had had for years, off and on, slight attacks of rheumatism, chiefly muscular, and for a year before the seizure, in which we saw her together, had been much depressed by family affliction. She was usually a woman of great composure, excellent judgment, and of a vigorous constitution. Her attack began about the last of April with rheumatic swelling of the knees and elbows, and the joint affection was already subsiding about the middle of May, when she became very much distressed mentally, showed signs of dissatisfaction with persons about her, insisted that she had swallowed a chicken bone, had restless nights, and finally a delirium, with occasional lucid intervals when strongly roused, which settled down into insanity. She only vomited at the commencement; had no headache; the urine was not albuminous; the pupils were sluggish and small; the heart was not diseased; the temperature was about 101°—I quote from memory, for the exact records were lost, but Dr. Dunton and myself remember that it was never a high temperature. Some time after the manifestation of the cerebral symptoms, the joint affection, already waning, disappeared more quickly, a facial palsy of the left side was noticed, with marked drooping of the eyelid; there was evidently loss of power in the left hand, and somewhat impaired power, though this was more difficult to establish, in the left leg. Sensation and reflex movements appeared good; the patient's mental condition making it difficult to study some of these phenomena accurately. The mental derangement continued until August, when the mind gradually cleared up, and the palsy passed away. She left for Newport October 1st, entirely sane, and is now as vigorous in body and mind as ever, having, however, occasionally very slight attacks of rheumatism.

There is, it is proper to add, one case of derangement in the family. She had been taking citrate of potassium, followed by lemon-juice and quinia, when first attacked. These were stopped, and though iodide of potassium and assafoetida were for a time given, her recovery was largely due to her systematic nourishment and her excellent digestion. For a considerable time she took milk-punch and beef-tea, both by the mouth and rectum.

It is needless to dwell on the features of these cases any further than to state that I believe the latter to have been one of plugging of one or several of the finer arteries on the right side of the brain, and that gradually the circulation being re-established recovery took place. I may be wrong in this opinion; it may have been an instance of true rheumatic meningitis. But I read this case now in the light of that obtained by Case IV., in which the lesion supposed to exist was found. Case IX., moreover, is the only one in this paper which might be called rheumatic insanity,

similar to that described by Greisinger, and lately again by Benjamin Ball,¹ and in the able paper of Greenfield,² on insanity as a sequel of acute disease. To speak of some other morbid manifestation met with in cerebral rheumatism. In some of the cases, *hurried respiration* attracted my attention without anything in the condition of the lungs or heart to account for it; occasionally, however, there is decided congestion of the lower lobes of the lungs. The *eruption*, I find mentioned in my notes, may be scattered all over the body, even on the face (as in Case X.). It consists of irregular dull red spots sluggishly influenced by pressure, and which may be perceptible after death. It probably depends on stagnation of the blood in the capillaries from paralysis of certain vaso-motor nerves.

One of the most interesting questions connected with the study of cerebral rheumatism is the *temperature* of the body. As a rule, it is high; and the decided rise precedes the manifestation of the cerebral symptoms. Usually—and the record of a number of the cases in this paper proves it, for instance, Cases IV. and VII.—after the temperature has attained to full febrile heat it remains so without great variations, except a morning remission of about one degree, or oftener of less, until the disorder gradually terminates, or until just before death the animal heat rises considerably. Sometimes, where it is very high, it falls several degrees as a favourable indication, as in Case XII. On the other hand, a fresh joint-affection, of decided character, changes the even markings. In other words, in this respect cerebral rheumatism acts very much as rheumatism of any of the other internal organs. I have studied this matter carefully with reference to endocarditis, and partially with reference to pericarditis, and I have been struck with how comparatively little the thermometric record fluctuates during the internal inflammation—in fact, less than during the ordinary course of rheumatic fever; and decided fluctuations are very apt to be due to fresh rheumatic attacks of the joints or other parts. This general law I find, for the most part, reproduced in the study of my cases of cerebral rheumatism. But how is it with regard to the extreme temperature which is supposed to characterize cerebral rheumatism, so to characterize it that it has almost become the doctrine of the day that hyperpyrexia in acute rheumatism and brain symptoms are synonymous? The observations in this paper negative the necessary connection. True, high temperature is found, but very often it is a mere result immediately preceding death (as in Case VIII.), and not witnessed during the height of the malady, and while the struggle for life is still going on. It is needless to refer in detail to some of the cases already here recorded at length. But I will add two (Cases X. and XI.) bearing on this point. In the one, while the cerebral trouble was at its height, the thermometer did not rise above 102°; nor did it any time, unless, perhaps, just before

¹ Le Mouvement Médical, Oct. 1874. ² St. Thomas's Hospital Reports, vol. iv.

death, when it was not taken. In the other case, the extraordinarily high temperature of 116° was reached—the highest that, so far as I am able to find, has been recorded as having been reached in any case of any kind of illness that ended in recovery; yet there was not a cerebral symptom from beginning to end.

CASE X. Cerebral rheumatism terminating in a typhoid condition, without cardiac trouble, and but slight joint-affection; temperature not above 102° ; death.—Alice M., domestic, aged 26, unmarried; was admitted to the hospital March 9, 1872. Her health had always been good in Ireland, which she had left a year before. After she had been here six months she had a severe attack of acute rheumatism; yet, although the large and small joints of both the upper and lower extremities were involved in the course of the disease, it subsided at the end of three weeks, and there was no cardiac complication. Following this acute malady, she was subject to pains in her ankles, especially in changeable weather; the joints remained swollen, and were liable to become œdematous when she remained long in the upright posture.

The seizure for which she came to the hospital began, after exposure, eight days before admission. No cardiac complication was discoverable; she complained of her shoulders and back, and of pain in some of the joints, which were slightly swollen and tender, but not red. She perspired, yet not profusely. Her appetite was poor; the tongue had a white, creamy coat; the bowels were constipated; the urine was not albuminous. She was ordered bromide of ammonium, twenty grains every three hours.

During the succeeding week she decidedly improved, and the articular affection greatly ameliorated. The tongue cleaned off; the bowels were easily kept open by laxatives, and the appetite improved; the heart was regular in its action, and was not too rapid; no murmur nor friction sound was audible; there was no irregularity of respiration, and her general condition was much better.

This progressive improvement continued until the 18th, when the evening temperature, which had remained steady at from $98\frac{1}{2}^{\circ}$ to $99\frac{1}{2}^{\circ}$, advanced to 102° , while the pulse was 96; but there was no accession of the joint trouble, or signs of cardiac lesion. She slept poorly, however, and it was found necessary to administer morphia gr. $\frac{1}{4}$ at night. On the 20th the evening temperature was 101.6° , the pulse 112. On the 24th, the twenty-third day of the disease, she had mild delirium both throughout the day and at night; but she had no headache. The pupils were rather small; the face was apparently puffy and pale, interspersed with large red spots; the pulse of fair volume—114. She complained of soreness in her throat, and some difficulty of deglutition; the tongue bore a thick white coating at its sides. She was put upon compound powder of jalap \mathfrak{ss} daily; and acetate of potassium grs. x every three hours. A blister was ordered to be applied to the nucha.

The following day there was some swelling and tenderness of the wrists and smaller joints. She was delirious, and frequently attempted to leave her bed. Three days later she was still delirious at times, but not so much so as when last noted, and had become more quiet and disposed to sleep. She had slept very well the preceding night, after taking a Dover's powder, and her mind became quiet. The eyes were not injected; the pupils were normal, and she could read. She had no headache, no vomiting, and the

bowels were opened by the jalap powders. The tongue was rather dry. There were no signs of heart disease, and the urine contained no albumen.

At this juncture she was taken before the class. While lying quietly in the lecture-room, during the lecture, she suddenly began an explanation of something that had occurred in the ward, and continued quite volubly for several minutes, addressing the lecturer loudly by the title of "Doctor," but soon speaking in a vague and dreamy manner. The acetate of potassium was ordered to be increased to twenty grains every three hours. A small blister was applied behind each ear, and the one at the back of the neck was re-opened, and a stimulating dressing applied. She was directed to have a nutritious diet, without any stimulant.

The morning temperature remained at 99° to 100° , but the evening temperature, which had been 100° to $101\frac{1}{2}^{\circ}$ since last note, rose on the evening of the 28th again to 102° . The variations in temperature at about this period may be seen from this record: 24th, A. M., pulse 100, temp 99° ; P. M., pulse 102, temp. $101\frac{1}{2}^{\circ}$. 25th, A. M., pulse 108, temp. 100° ; P. M., pulse 102, temp. $101\frac{1}{2}^{\circ}$. 26th, A. M., temp. 99° ; P. M., pulse 108, temp. 100° . 27th, A. M., pulse 96, temp. 99° ; P. M., pulse 102, temp. 100° . 28th, A. M., pulse 120, temp 99° ; P. M., pulse 112, temp. 102° .

She was rather more restless during the night of the 28th, and the next morning complained, for the first time, of headache; the hallucination existed that she had two heads, and she fancied that she suffered pain in the back of one head and in the forehead of the other. She now made more efforts to get out of bed, and had to be forcibly restrained, and at last tied in bed. Although the mild delirium continued, she generally gave a rational reply when addressed; but not always. There was occasional muttering, sometimes connected, but oftener unintelligible. Her skin appeared bluish; the surface circulation was defective and slow; pulse 104, full, but very compressible; respirations 28. She passed urine freely, and the joint trouble became no worse. The tongue was not quite so dry, but sordes were seen on the teeth and gums. There was no cardiac murmur; the first sound was short.

Sherry wine was now directed to be given every three hours. The succeeding day, the 30th of April, the pulse was 118, and had more volume. Her tongue resembled very much the tongue of typhoid fever. Although she had had no opium the preceding night, she slept better than usual. Pupils moderately dilated, and reacted well; there was no conjunctival injection. She lay in a dull, semi-unconscious condition, and although she could still be roused to answer questions, she did so with less alacrity and appropriateness than before. The face was a little flushed, and the expression very dull. Milk-punch was now substituted for the wine, so that she had an ounce of whiskey every three hours. Her feeble condition gradually deepened into coma, and she died four days later. There was little variation from that already mentioned to record in the pulse, respiration, or temperature.

Autopsy.—Permission was obtained to examine only the brain. The vessels of the membranes were slightly injected. There was no abnormal effusion in the subarachnoid spaces or ventricles, and no clots in the cerebral vessels were visible to the naked eye. The brain-substance, owing to an accident, was not examined microscopically; judging from the gross characters, no lesion existed.

CASE XI. *Acute rheumatism with extraordinarily high temperature of 110° ; no cerebral symptoms, nor endocardial or pericardial disease; typhoid condition; recovery.*—Envelope Y, domestic, single, Irish,

was admitted to the Pennsylvania Hospital on the 20th of January, 1870. A tendency to rheumatism existed in the family, her mother having suffered from repeated attacks. With the exception of the small-pox, which she had at four years of age, and which left her face moderately scarred, she had enjoyed unexceptional health until five days before admission. At this time she was exposed to cold while overheated and perspiring, and was seized with a chill and headache, followed within twenty-four hours by tonsillitis, and pain and swelling in one of her thumbs. During the next few days her knees, ankles, right shoulder, and left wrist became moderately red, painful, and swollen. Fever was present, with thirst, loss of appetite, and constipation. She perspired freely; slept fairly at night; and had no cardiac pain. She was without medical treatment except a dose of salts on the first day.

On the morning after admission her pulse was 120, the respirations 40, and the temperature in the axilla $105\frac{1}{2}^{\circ}$. She slept well during the night after taking a Dover's powder. The skin was moist, but she did not sweat profusely. Urine was passed freely; the bowels were opened the day she was admitted; her tongue was coated and pasty. The rheumatism was confined to the left knee and shoulder and right wrist; there was no cardiac murmur, but the first sound was rather short and sharp.

The bromide of ammonium was given in fifteen grain doses every three hours for the first two days, and then increased to twenty grains, repeated at the same interval.

The heart was again examined on the 22d, but no murmur existed. The disease reappeared in the thumb first attacked; she sweated profusely, and seemed very restless and unable to sleep. A transitory diarrhœa troubled her in the afternoon, but it was checked by twenty drops of laudanum given during the night, so that she was better on the morning of the 23d, although she seemed weak, and the rheumatism was in about the same state as before. The skin was moist, but not excessively damp, the pulse was 120, the respirations 24, the temperature 103.5° . In the evening pulse 104, respirations 24, and temperature 110° , two observations confirming this record.

The next day the first sound of the heart seemed unusually dull, like that of typhoid fever, and was very short and indistinct; the second sound was accentuated, there was no murmur. Pulse of moderate volume, but very compressible, and the beats were not all of the same fullness. She perspired freely during the night, and, as she was restless, an opium suppository was given. She had only two alvine evacuations in the preceding twenty-four hours, she passed water freely; but the tongue was coated and dryish. She had less headache than on admission, had not had any cerebral symptoms, and the joint affection had again disappeared from the thumb, but the left wrist and knee were still quite painful. In the evening the pulse was 98, respiration 32, and the temperature 103.5° , a fall thus of six and a half degrees from the preceding evening.

The previous treatment was continued, to which was added sixteen ounces of beef-tea daily, but no stimulant was given. She was also directed to take eight grains of quinia daily.

On the 25th it was reported that, although she was not restless, she had not been able to sleep during the preceding night. She had no accession of rheumatism, nor much pain, and the affected joints were better. There was an entire absence of any cerebral symptoms or mental disorder. The skin was moist, the kidneys acted well, the bowels were constipated rather than loose, but the tongue remained dry and brownish,

and looked like the tongue of typhoid fever. Pulse 92, respirations 36, temperature 103.5°.

The next morning the pulse fell to 88, the respirations became 40, and the temperature 100°. But this rose again in the evening to 106°, with the pulse and respirations of about the same frequency as in the morning.

The joint affection had very much improved on the 27th; the temperature was 105°, with a pulse of 86. and 40 respirations to the minute; these were about the same in the evening, but the temperature had fallen one degree.

The dull first sound of the heart which was before noticed was again markedly observed on the 28th, but neither murmur nor increased percussion dulness was present. The rheumatism still continued to improve, except that she complained of pain in the right shoulder. The tongue was coated, but not dry; she passed water freely. A. M., pulse 72, resp. 40, and temp. 100.5°; P. M., pulse 76, resp. 36, and temp. 100°. Slept poorly during the night, and the right shoulder seemed very painful. From this time, however, the articular affection steadily improved, and the temperature did not again go above 101½°. The typhoid condition gradually disappeared during the ensuing twelve days, at which time the temperature was 98°, her expression was much brighter, and her tongue was cleaning. She had then been taking acetate of potassium for nine days (grs. xxx every three hours at first, and subsequently every four hours), which kept the urine alkaline; the bromide had been discontinued, and in truth it had not been, since the 25th, given excepting occasionally; she was well nourished, and at times small quantities of stimulus were added to the food.

During the last week she had a slight attack of pericarditis with a moderate amount of effusion, which soon disappeared. She now convalesced, and excepting a modification of the first heart-sound, which remained indistinct, no signs of disease existed.

For the *morbid anatomy* of the affection I must refer to the autopsies in the individual cases. I will only point out that not in one was there any marked congestion of the brain; in truth, the brain is either mentioned as being normal and firm, as in Cases II. and IV., or as pale and anæmic, as in Cases III. and VII., or without lesion save a slight injection of the vessels of the membrane, as in Case X. The brain lesion, or rather the state of the vessels, in Cases III. and IV., is most interesting; and so is the acute degenerative disease of the kidneys in Cases I. and II. I believe that both these morbid states will be found more frequently if they are closely looked for, and invite the attention of observers to these points. Some of the kidneys in the *post-mortem* inspections here detailed were not examined with the care that, having noticed the changes, I should now bestow on them.

In none of the autopsies did I meet with meningitis. But I am far from wishing to assert that such cannot happen. I find, indeed, in the literature of medicine, some cases which seem undoubted, such as the one of Ollivier and Ranvier in the *Gazette Méd. de Paris*, 1866, and some of the cases quoted by Gintrac in the eighth volume of his *Pathologie Interne*. Sir Thomas Watson speaks of having examined a case of a female patient, who, dying after symptoms of cerebral inflammation, supervening upon

acute rheumatism, was found to present unequivocal pus smeared over the hemispheres of the brain, and refers to similar cases reported by Fyle and by Fuller; while Niemeyer mentions a dissertation of Flamm, which I have not been able to obtain, containing some instances where post-mortem examination showed the presence of inflammatory disease of the meninges. We are, therefore, bound to conclude that meningitis may occur in acute rheumatism. But I believe it is a very rare lesion; and what is called rheumatic meningitis is generally not meningitis at all, but cerebral rheumatism with an absence of meningeal lesions.

Having said this much of the morbid anatomy, and having described at some length the clinical features of cerebral rheumatism, I may add a few words as to its *nature*. That the disease is not a metastasis I think the cases in this paper fully attest. I believe that, leaving out the exceptional instances of real rheumatic meningitis, the true pathology of the cerebral disorder is to be sought in the action of the rheumatic poison on the brain, whether it does so directly or indirectly, through the changed composition of the blood, or by both concurring. To these elements is often added an altered condition of the finer vessels of the brain. In other words, the rheumatic poison may fasten upon the lining coat of these as it does upon the endocardium, and, favoured by the altered condition of the blood, lead to plugging, as was so distinctly found in Case IV., and as was beginning in Case III. Occasionally it may be an embolus washed from the heart into the cerebral vessels that occasions the circulatory disorder, but more usually it is a thrombus there formed; and if in any case there be not actual obstruction, there is still circulation of altered blood, which, moreover, is apt to be still more vitiated by the impaired action of the kidneys—itsself another expression of the rheumatic poison seizing upon an internal organ. The common condition of the brain-tissue in cerebral rheumatism is that of nutrition interfered with, and of anæmia; and where rheumatic endocarditis and pericarditis coexist, this may show itself all the more quickly. Where the rheumatic poison, directly or through the altered blood, acts on the nerve centres regulating temperature, hyperpyrexia results, but I have already stated my conviction that the importance of this as explaining cerebral rheumatism has been greatly over-stated.

From these remarks it may be seen that I accord little weight to a view of cerebral rheumatism that has been both strongly held and vehemently attacked, that it is due to the action of certain drugs, especially of quinia. In tracing out indeed the recorded cases, I find it equally arising under the use of nitrate of potassium, of blood-letting, and of iron; I notice it in several of my cases which were treated with bromides; I see it coming on with and coming on without treatment, and the inference therefore is, that as it arises on such opposite therapeutic plans no drug is responsible; though of course it is evident that with certain symptoms arising some drugs had better be avoided or discontinued. Nor can I believe

that the nervous temperament of some patients, to which Tronseau eloquently assigns it, acts as anything more than a predisposing cause.

In an early part of this paper, I alluded to the fact that cerebral rheumatism is so much more common some years than others. The explanation of that fact is to be sought I think in some peculiarity of the rheumatic poison which makes it fix more readily on the brain, as we sometimes see by way of exception the typhus fever poison attacking the intestine, or influenza producing a catarrh of the mucous membrane of the bowel, rather than of that of the respiratory tract. I have thought of seeing if atmospheric changes might determine this peculiarity in the case of rheumatism, and with the assistance of Dr. Woodbury have examined into the daily barometric and thermometric records kept at the Hospital while the patients were there under observation. We found nothing however that could establish a law, though the brain symptoms were, with a falling barometer and rising temperature, observed to grow worse. This was strikingly witnessed in Cases III., IV., VIII., and X.

With reference to the *diagnosis* it is always of the greatest importance to try to find out as nearly as we can the exact form of the cerebral disorder before us; and, as in this paper, we have made out several forms clinically, however closely related we have found them to be pathologically, I shall endeavour to indicate, as far as I believe the facts warrant, the distinguishing traits.

The cases occurring suddenly, formerly described as apoplectic, are, I think, mostly uræmic, and a careful examination of the urine, which, after the instances discussed in this paper, it seems now almost superfluous to insist upon as always incumbent in cerebral rheumatism, will go far to clearing them up. Moreover, the temperature of these cases is not as a rule a high one.

Another form of the suddenly-developed malady is that due to an embolus washed into the brain from the heart. Here belong the cases where, after slight signs of mental disturbance, hemiplegia is rapidly developed, and cardiac disease is found.

The cases of which delirium is a prominent feature it may be very difficult to tell apart. Where we have a hysterical form of delirium, protracted, with tremor, with or without local palsies, with temperature which may be high or not, but which is generally not high, the chances are that we have plugging of the cerebral arteries from rheumatism affecting them, and not from disease of the heart.

Where we have delirium fitful, with great prostration, dry tongue, high temperature as a rule, it is probably cerebral rheumatism without marked lesion, excepting anæmia of the brain. These cases may or may not coexist with disease of the heart. Sometimes the symptoms are so truly typhoid that we ask ourselves whether such cases ought to be classed with cerebral rheumatism; would it not be better to regard them as "typhoid rheumatism," and to view the cerebral symptoms in the same

light as we do those of the low fevers? Probably it would, but as it is a question if it be not the rheumatic poison acting on the nerve centres as well as on the blood that gives rise to them, and as the cerebral symptoms are very marked, we must for the present still regard the disturbance as a form of cerebral rheumatism.

Now how can we distinguish true rheumatic meningitis? Most authors speak of absence of headache and of vomiting as being the distinguishing signs of the malady. This is incorrect, and is based on the supposition that all cases of cerebral rheumatism are of this character, and hence on the confounding of the different types. On the contrary, I believe the symptoms mentioned, with usually a moderately high temperature, active delirium, irregular or slow pulse, to be diagnostic. They were present in one marked instance of the malady I saw in consultation; and I have carefully analyzed such of the cases on record in which the *post-mortem* results or the observations seem to be undoubted, and for the most part find them. In some, moreover, there existed strabismus, one-sided dilatation of the pupil, palsies of some of the cranial nerves or local spasms, and in a few hemiplegia.

In looking further at the diagnosis of cerebral rheumatism, we must not forget that the cardiac lesions may produce head symptoms. But unless the cardiac lesions be great the head symptoms are slight, and when these are severe we have to strike the balance carefully between the morbid manifestations to determine whether the cerebral disorder be purely secondary, or whether it be due to coexisting rheumatic trouble of the brain. In individual instances that may be very difficult, perhaps impossible. Generally it is not. If we have high temperature present, it is certain that the brain symptoms are not purely due to the heart disorder.

Lastly, in reviewing the diagnosis of cerebral rheumatism we must bear in mind that occasionally the signs of nervous disturbance precede the articular trouble. One marked case came under my observation in a child, and the meaning of the cerebral symptoms was explained by the swelling of the joints. Handfield Jones, in the *Medical Times and Gazette*, Nov. 1871, relates an instance of severe cerebral symptoms and fever of the typhoid type, ending fatally, which proved to be rheumatic; and an instance is reported in the same journal, for 1834, in which there was, as the first marked symptom, Bell's palsy; subsequently the left arm and leg became paralyzed, and about the beginning of the tenth week the joints became inflamed, and the further progress of the case was one of ordinary acute rheumatism; the paralysis gradually disappeared. Trouseau, in his clinical lectures, mentions an extraordinary case in a young girl in which paraplegia existed first, then hemiplegia and amanrosis, which passed away as the rheumatic joint showed itself. And cases of chorea, too, may thus appear in advance of the rheumatic fever. But this is very unusual; unusual even is it during its height, as happened in the case related in the *Medical Times and Gazette*, for 1863, occurring on

the thirteenth day of the attack, and preceded by occasional delirium. Chorea when it arises is commonly a sequence of the acute malady, not its precursor or attendant.

The *prognosis* in cases at all marked is always a grave, and generally an unfavourable one; especially so in those presenting evidence of kidney change, or in which the temperature is very high and the fever of a typhoid kind. The palsies that happen are not as serious as might be supposed. They are usually transitory and end in recovery.

In determining the *treatment* we ought to lay great stress on what we can ascertain to be the exact cause of the disturbance. Rheumatic meningitis is best treated by leeching, by the bromides, by active purgation, by the alkalies, the iodides; but in the majority of instances of rheumatism of the brain, as we have cerebral anæmia, these remedies are either forbidden, or are not available. Opium and chloral may be employed for the delirium and restlessness; quinia in tonic doses, food, stimulants for the relief of the typhoid symptoms; while in all cases we should pay the strictest attention to the action of the skin and of the kidneys. Moreover the cardiac symptoms must be closely watched, and the action of the heart sustained, and this is often best done by digitalis. Where we can, the treatment for the rheumatic symptoms must be continued, and in a form that shall not be depressant; hence I do not think the bromides ought as a rule to be employed, which I did for a time, until I understood the meaning of the cerebral symptoms better. Where there is any sign of retrocession from the joints—which, however, is the rare exception—we may imitate the treatment of Davies, and blister them. In one case he cites, in which there was delirium, as soon as the blistered joints began to discharge freely the patient recovered. I have said nothing thus far about the cold-water treatment. My cases were mostly under observation before this began to attract attention in rheumatism, and, as I have shown, many of them had no high temperature. I think, indeed, that it is to these this treatment ought to be confined. But the subject is too wide a one to handle here, and I must refer those who wish to analyze the results obtained to the able papers of Wilson Fox,¹ of Hermann Weber,² of Southey,³ of Kelly,⁴ and of Greenhow,⁵ and to a clinical lecture by Dr. Henry Thompson.⁶

In concluding this paper I must again refer to the value of stimulants in many of the cases, and looking back my regret is that I sometimes did not employ them more freely. What may at times be gained by them, even under the most unpromising circumstances, this case proves.

¹ London Hospital Reports, 1864.

² Treatment of Hyperpyrexia by means of External Application of Cold, 1871.

³ Clinical Society's Transactions, vol. i.

⁴ The Practitioner, vol. ix.

⁵ Clinical Society's Transactions, vol. vi.

⁶ Medical Times and Gaz., 1873, vol. i.

CASE XII.—*Cerebral rheumatism with marked delirium and stupor ; coma ; apparent death ; recovery under inhalations of ammonia and stimulants.*—Mary W., Irish domestic, single, age 21 ; with the exception of acute rheumatism, when nine years old, her health had always been very good. Although she suffered, during this seizure, from cardiac pain and dyspnoea, she recovered, she believes, perfectly from it with the exception of a slight stiffness of one of her ankles which lasted nearly two years.

She had a subsequent attack about four months before admission, which only affected one knee and lasted but four days.

The acute rheumatism, for which she was admitted into the hospital Jan 7th, 1870, began in one knee about one week previous, without assignable cause or being preceded by a chill. The disease involved most of the larger joints in succession, during the first week, and was accompanied by considerable cardiac pain, with fever and anorexia. She was under medical treatment before coming to the hospital.

When admitted her pulse was 126 and not very strong ; skin hot, tongue coated ; bowels constipated, and she had much thirst ; breathing oppressed, 36 in the minute, but no cough. There was some pain in the cardiac region which was increased by deep inspiration. A soft systolic murmur was audible at the left apex. The articular affection was limited to the wrists, which were red and very sensitive, and the right knee, which was swollen but not discoloured.

Bromide of ammonium grs. xx every three hours, with a Dover's powder at night, was ordered. Dry cups were applied to the back of the chest, and great relief was obtained from poultices over the cardiac region.

The urine examined the next morning was found to be of pale straw colour and slightly cloudy ; specific gravity 1007 ; it contained no albumen.

During the succeeding week the joint affection gradually subsided, and there was but little change in her condition worth noting, except that she slept poorly, perspired more freely, and the systolic cardiac murmur became more defined and lost some of its softness.

On the 13th it was noted that she was slightly delirious at times during the day ; noisily so at night. The respiration continued frequent, 32, but there were no new developments. The tongue remained coated, she took nourishment well ; the bowels were opened daily. She slept better, but was still delirious at times, chiefly at night.

A week later the cardiac murmur became harsher, and the action of the heart more tumultuous. The restlessness and mental aberration continued, and were a great deal worse on the nights when the opiate was suspended. She appeared very ill, but still answered questions intelligently. Respirations 50, pulse 120.

A blister was now applied to the cardiac region, and tincture of digitalis, ten drops thrice daily, added to the former treatment, and she was well nourished.

The next day, January 20th, the cardiac impulse was quite distinct near the apex, but the heart's action was not so forcible. The area of dulness was not enlarged ; there was no pericardial friction, but the heart seemed to be losing power, although its action was never fluttering or irregular. The face was somewhat cyanotic, and she was now nearly comatose after being delirious all night. The pupils were very small and reacted sluggishly. Pulmonary resonance anteriorly remained clear, but there was some dulness with harsh breathing at lower part posteriorly, particularly on the left side, and the temperature in the axilla was 106°. There had been no sudden

retrocession of the joint trouble, which, however, had by this time gradually disappeared, to a great extent. The urine was acid and contained a small amount of albumen; the secretion had been very free until the 20th, when it became somewhat less so.

All other treatment was suspended, and she was put upon carbonate of ammonium every hour, and as much whiskey as she could be made to take, but she swallowed with great difficulty; an injection of beef-tea and whiskey (℥ij of each) was ordered to be given every two hours until she reacted, when the proportion of whiskey was to be decreased. Small blisters were directed to be applied behind the ears. The temperature, which at noon was 106° , fell to $103\frac{1}{2}^{\circ}$ at 8 P. M. But during part of the middle of the day she was so prostrate as to make it seem cruel to continue any treatment. Once she appeared to be dead, and it was only by making her inhale ammonia, and then pouring immediately some stimulus into her throat, that she could be made to swallow; this was done for hours.

On the succeeding day the joints were all limber and free from pain, and the skin was moist. The pupils were more dilated, and she was in a state of muttering delirium, and was tossing about and constantly moving her arms; she recognized an attendant at times. A sphygmogram showed an abrupt, rather high, very slightly oblique ascent; a rounded summit; an abrupt, slightly oblique descent; and a marked and wide undulation before the next ascent.

During the preceding twenty-four hours she had taken ten grains of carbonate of ammonium every hour, also an injection of beef-tea and whiskey every two hours, all of which she retained except the first one.

During the night she had half an ounce of whiskey every hour. The tongue was dry, brownish, and coated; the bowels were opened by the first injection but not afterwards. No irregularity was noticed in the action of the heart, and there was now a little more volume and precision to the beat; the murmur was still marked, however, and was systolic; slight dulness still existed at the lowest portion of the left lung.

The treatment of the previous day was continued except the injections. The blisters were to be kept open. She was ordered a turpentine and oil enema to insure a full evacuation of the bowels, to be followed by a suppository containing ten grains of assafoetida, to be exhibited every three hours.

The pulse was 116, respirations 50, and the temperature $103\frac{1}{2}^{\circ}$.

The next day, Jan. 22d, A. M., pulse 108, respirations 48, temperature 102° . P. M., pulse 114, respirations 64, and temperature $102\frac{1}{2}^{\circ}$. She now passed water freely, and the bowels were well moved by the injection. She slept better the past night, but was still restless and irritable. Tongue dry and scaly; skin moist; the urine acid. The mind was much more conscious, and she was not so restless, although she moaned and complained at times.

The treatment, except the enemata, was continued, to which quinia sulphate, grs. viij daily, was added. She was now taking ten grains of carbonate of ammonium and half an ounce of whiskey every two hours.

On the 23d she was not as well as the day before, and had passed a restless night. Pulse 86, respirations 64, temperature 104° in the morning. The cardiac murmur persisted, but could not be analyzed on account of the frequent intermissions that occurred; the pulse was feeble. There were no signs of the joint trouble; the skin was moist, the tongue had a thick, whitish coat; the bowels were open. Her mind wandered very much, but she obeyed directions. The pulsation in the carotids was quite

marked, and was stronger in the left than in the right one. The stimulant was now increased again to one ounce every hour. There was no paralysis; the skin was moist; the urine acid.

The next day, Jan. 24th, A. M., pulse 96, respirations 60, temperature 102°; P. M., pulse 98, respirations 52, temperature 102°. The pupils were rather large; the tongue dry and brownish. The carbonate of ammonium was reduced to grs. x each third hour, and she was ordered oil of turpentine fifteen drops, with three grains of sulphate of quinia alternately on the intervening hours.

On the 25th, pulse not so irregular; she had slept better, and was not so restless. The pupils were of moderate size, and sluggish. Pulse 112, resp. 40, temp. 102°.

26th, A. M., pulse 124, resp. 52, temp. 104°; P. M., pulse 132, resp. 40, temp. 105°. The urine passed was of a dark straw colour, faintly acid, specific gravity 1022, it was slightly albuminous, and contained pale granular casts. The face was quite flushed, the tongue was still coated but moist, and the pulse was weak.

On the 27th, the evening temperature was 104°. The mind was becoming clearer, and although she still wandered at times, she was not so restless, and her general strength was evidently improved.

Upon examining the heart a double pericardial friction sound, like the puffing of a locomotive, and of moderate intensity, was heard. During the preceding twelve days it had been noticed that an alteration had occurred, which was synchronous with the second sound, but the irregular action of the heart, by making the observations uncertain, prevented a previous record. There was little, if any, increase of cardiac percussion dulness, but the impulse near the apex seemed somewhat more fluttering than before, and the murmur was fainter. The friction was best perceived at the left base, and extended over toward the right.

The stimulant, of which she had been taking f℥xxiv daily, was reduced to f℥xviij, and the turpentine was discontinued. The quinia was increased to grs. xvj daily. The carbonate of ammonium, grs. x, was directed to be given every four hours, and thirty grains of acetate of potassium every three hours. A small blister was ordered to be applied to the cardiac region, to be followed by poultices.

On the 28th, some pericardial effusion was noticed and the apex beat was less distinct; the pulse was 104, and was more irregular than the preceding day; the tongue was again dry and brownish.

The stimulus was again increased to an ounce every hour. There was some pain in the wrist, but it was transitory. The murmur at the apex was faint. The urine, which was passed freely, was acid, and contained a trace of albumen and some pale epithelial casts.

The case now passed from observation in transferring the ward, and no further notes were taken until three weeks later, February 20, when it was recorded that the girl had steadily improved and her urine had become free from albumen and casts. The same general treatment had been continued. She was discharged two weeks later (March 6th). She said that she felt as well as ever, she had no joint trouble, and her general appearance was excellent.

With this case I shall end the paper. I have endeavoured to make it a faithful clinical study of a comparatively rare, but most interesting complaint, and I venture to indulge the hope that the analysis to which the question has been subjected will at least have succeeded in clearing the

path of some of the obstacles for future observers. In the recognition of the various forms of the malady; in the attempt to trace them to a definite pathological condition, and to discriminate them at the bedside; in the proofs afforded of an often coexisting kidney trouble, and of the fallacious nature of the supposed metastasis; in the examinations of the temperatures and the evidence adduced that these are far from invariably high, and thus that high temperature in cerebral rheumatism is not the one point on which everything hinges; in these and some other matters I trust to have aided, however imperfectly, in the elucidation of the nature and manifestations of cerebral rheumatism.

ART. II.—*Description of a Form of Puerperal Fever which occurred at the Philadelphia Hospital, characterized by Diphtheritic Deposits on Wounds of the Genital Passages and by other Peculiar Phenomena.* By JOHN S. PARRY, M.D., one of the Attending Accoucheurs to the Philadelphia Hospital, Vice-President of the Obstetrical Society of Philadelphia, etc. etc.

DURING the ten years from 1860 to 1870, the Philadelphia Hospital enjoyed a complete immunity from any form of metria, with the single exception of the year 1865, when there were three cases and two deaths from puerperal peritonitis. During the five succeeding years the condition of the department was all that could be desired, and the mortality of child-bed was 1 in 132.5, the deaths all being due to unpreventable diseases.

The four years which have followed have been marked by no such happy results. Early in 1870 it became apparent that there was some unhealthy influence in the wards, and on February 7, of that year, puerperal fever made its appearance in a patient of my colleague, Dr. Girvin. It soon proved fatal, and from that time until July 1, 1874, the hospital has not been free from the disease except at short intervals.

The history of the epidemic may be divided into two periods. The first extends from January 1, 1870, to June 1, 1871, when the wards were abandoned, and for three months the patients were delivered in a temporary hospital erected in an adjoining field. This was occupied until September 1, 1871, when the second period may be said to have commenced, and which comprises the interval between the 1st of September, 1871, and the 1st of July, 1874.

During the first period 262 women were delivered in the ward, of whom 14 died, a mortality of 1 in 20.15. Of the deaths 2 were caused by puerperal convulsions, 1 by mania complicated with pneumonia, and 11 by metria, or 1 in every 23.81 of the women delivered died from a disease

which we have good reason to believe proper sanitary regulations would have prevented.

During the second period, from September 1, 1871, to July 1, 1874, 545 women were delivered, of whom 15 died, 1 from rupture of the uterus, 1 from scarlet fever, and 13 from metria, making one death from the latter in every 41.92 women confined.

Taking the whole number of deliveries from January 1, 1870, to July 1, 1874, inclusive of those confined in the temporary hospital, 868 births occurred in the department. Among these women 29 "died of child-bed," a mortality of 1 in 29.93. The mortality from metria alone was 24, or 1 in 36.16 confinements.

During the same period 99 cases of the disease occurred in the wards, making the mortality in round numbers 25 per cent.

It is not our intention to give a detailed account of the symptoms of puerperal fever, but only to describe those which were the most striking, and which were somewhat uncommon.

The disease set in suddenly at the end of the first or during the second, but rarely later than the third day after delivery. In some cases it commenced with a well-marked chill, or more commonly with a simple rigor, and, in some instances, even this was absent. In some of the women the first symptom was a peculiar appearance of the face which will be described presently, accompanied by slight pelvic pain which the patient usually supposed to be after-pains. These symptoms were sometimes present for twelve or eighteen hours before there was any febrile reaction. The chill or rigor was quickly followed by a high fever, furred tongue, abdominal tenderness, anorexia, tympany, diarrhœa, or constipation, and a rapid full pulse. The tongue in the first stages was covered with a white or yellowish-white fur, which sometimes disappeared quickly, especially during the early part of the epidemic, leaving the organ red, smooth, and dry in the centre. In fatal cases it became covered with sordes. It often resembled the tongue seen in relapsing fever very closely, the margins being red and clean, with a triangular clean surface at the tip. Vomiting was a frequent but not a constant symptom, and was rarely severe except in fatal cases. The ejected matters were often of a bright green colour. The bowels were usually constipated. Diarrhœa was rare except in fatal cases. The abdominal and pelvic pain was rarely severe, and in many instances was not complained of at all except on deep breathing. There was always more or less abdominal and pelvic tenderness, though the degree of this was not in proportion to the severity of the disease. This tenderness appeared among the first symptoms, and was located in the uterus or one or both iliac fossæ. It was immediately succeeded by enlargement of the womb, due to swelling rather than relaxation, a symptom which was sometimes so striking that it was difficult to believe that the organ did not contain a large amount of coagulated blood or an entire placenta. In several cases at the commencement of the epidemic

this conviction was so strong that it was only dispelled by a manual examination.

From the uterus or iliac fossæ the tenderness spread upward over the whole abdomen, which became very tympanitic, especially in the fatal cases. The tenderness was rarely so great as to cause the patient to complain of the weight of the bedclothes, and they almost always lay upon their backs with their limbs fully extended. If the disease had been severe, more or less induration from inflammation, thickening, and adhesions was discoverable in the lower portion of the abdomen during convalescence.

In several instances pelvic abscesses ruptured into the vagina, and in one an accumulation of pus in the abdominal and pelvic cavities was discharged through an opening in the median line nearly midway between the pubis and umbilicus. This orifice did not close for several weeks.

The lochia were diminished in quantity or entirely suppressed immediately after the initial chill. In three cases we noted that there was some uterine hemorrhage immediately after the disease set in. Certain very important local symptoms are to be noted in connection with the genital organs. It is believed that these were constant, as they were always found when sought, and were always present when these parts had been injured during labour. The slightest injury of the fourchette, the perineum, or the vaginal wall, was followed by the formation of a yellowish ash-coloured diphtheritic membrane, varying from a mere film to several lines in thickness. In some instances it could not be separated from the wounded surface, while in others small portions of it could be removed with dressing-forceps. The appearance of this membrane made us dread the slightest injury during labour, and if the perineum was torn the introduction of sutures seemed to still further endanger the life of the patient by furnishing so many additional points from which the diseased process spread. Three women who suffered rupture of the perineum were treated by the introduction of silver sutures, deep and superficial, within twelve hours after their delivery, and all died.

The diphtheritic deposit, so far as observed, never made its appearance on uninjured tissues, but when once formed on a wounded surface it may spread to the uninjured mucous membrane.

In several instances the whole interior of the uterus and a considerable portion of the vagina were found at the autopsy to be covered with this exudation, and it was once discovered on an inflamed spot on the mucous membrane of the descending colon. This patient suffered from an uncontrollable diarrhœa, violent tenesmus, and excessive tympany. There was sometimes considerable destruction of the parts invaded by this membrane, the tissues seeming to disappear as if they had been dissolved by the discharges. In no instance, however, did this erosive action produce serious destruction of structure.

As the disease progressed, if it was to be fatal the parts invaded by

this substance became dark coloured and covered with a more or less extensive but rarely a deep slough. The tissues immediately around the diseased portion, whether the case was fatal or not, were slightly injected and elevated. If the patient recovered, the false membrane gradually separated and was discharged in from two to ten days, leaving an ulcer which healed slowly by granulations.

In those cases in which the diphtheritic deposit was not discovered there is no certainty that it did not exist. It was ordinarily seen about the fourchette, the labia minora, and posterior vaginal wall, where it became visible upon separating the labia with some force. It may occur in any part of the parturient canal, and as the speculum was not used in any instance, its existence on the cervix and upper part of the vagina, no doubt, frequently escaped notice.

The importance of diphtheritic deposits in this variety of metria is very great, since the appearance of false membrane upon the surface of a wound is one of the first, if not the very first symptom of the disease. It certainly may appear before the chill and febrile reaction. It occurs with pallor, shrinking of the features, pelvic pain, and uterine swelling. Diphtheritic puerperal wounds have been previously noticed. Prof. Fordyce Barker directed the attention of the Obstetric Section of the New York Academy of Medicine to the subject in 1860 and 1861. Martin and Schröder have likewise described the disease which is characterized by this peculiarity.

The respirations were frequent, and on taking a full inspiration the patients usually complained of pain in the abdomen and pelvis. In the latter stages of the disease and in fatal cases respiration was interfered with, and was often rendered singultiform by the extreme tympany. In the majority of cases the disease ran its course without any pulmonary complication, but acute pleurisy and pneumonia were not rare, coming on at any time after the third or fourth day. The pleurisy was apt to be bilateral, and was attended with but little fluid effusion, but the membrane was often covered with large quantities of adhesive lymph. This, as well as inflammation of all other serous membranes, the peritoneum included, may be latent, and hence we may draw the practical conclusion that the lungs should always be carefully watched in this disease. In rare cases the pleuritic inflammation may completely mask the abdominal and pelvic symptoms.

Pneumonia is rarer than pleurisy as a complication of this disease. Several cases of thrombic pneumonia occurred during the epidemic, and in some of these cases the accompanying pleurisy had a local origin.

The pulse during the first twenty-four or forty-eight hours was full and round, but rather compressible. It was never small, hard, and corded, as in cases of acute peritonitis. It quickly ran up to 120, 130, or 140 immediately after the commencement of the febrile stage, and in one case it

reached 170 per minute on the third day after confinement. In a few days it became very frequent, weak, and compressible, as in all typhoid diseases.

The expression of the countenance was peculiar, very characteristic, and important as being among the first indications of the approaching storm. Within a few hours after delivery—sometimes before and sometimes after the initial rigor—the peculiar condition of the face manifested itself. It was frequently recognizable across the ward, and when the girl was smiling and happy, as she usually was, the appearance became almost ghastly. The features were shrunken as if the fluids had suddenly receded from the surface, leaving the forehead wrinkled; the eyes sunken and surrounded by livid, almost black areolæ; the nose pinched, sharp, and pale; the lips thin and apparently clinging to the maxillary bones. The skin of the face was pale, with a dirty, ashy, or parchment hue. In some cases, but by no means constantly, there was slight injection of the skin over the prominences of the malar bones, and rarely a flush resembling hectic was noticed upon one or both sides. The eyes were dull, the conjunctiva slightly injected, and the patient had an apathetic appearance, but with all was cheerful, and would look up wondering and smiling at the anxious inquiries in regard to her condition. This was sometimes the case when the very lineaments of death seemed to be stamped upon the face; and to see a woman happy and careless in regard to her condition under these circumstances was a picture almost too sad to contemplate. As has been before stated, these changes in the countenance sometimes preceded the ordinary constitutional symptoms of the disease—the rapid pulse and the hot skin—but they were always accompanied by some pelvic pain, with swelling and relaxation of the uterus. The pains being supposed to be “after-pains” by the patient, the peculiar expression of countenance became an important symptom.

In some instances the nervous symptoms were prominent. In fatal cases there was always delirium of the muttering, typhoid variety before death. In three women the disease set in with furious mania. In one of these the delirium came on during the night after her confinement, which occurred under the care of my colleague Dr. Girvin. Two persons who were very ill with the disease, and who were very delirious, occupied beds at either end of the same ward. Dr. Girvin's patient was placed as far as possible from them, in a bed near the middle of the room. Suddenly, and without any premonitory symptoms, she became so wild that she was restrained by straps, by direction of the resident accoucheurs. Before these could be applied, she rushed from the ward into the one adjoining, crying fire! and murder! at the top of her voice. She here frightened another patient who had been delivered two days before, and she immediately became violently maniacal. Both passed through very severe attacks of metria. The former soon had abdominal tenderness, high fever, feeble pulse, and finally an attack of phlegmasia dolens, which nearly

proved fatal. In the third case, which was the first of the epidemic, the mania was the initial, and, until the death of the patient, so masked the local symptoms that she was supposed to have puerperal mania. Two of these women recovered. As the disease progressed the delirium gradually merged into the typhoid variety.

In other and by far the largest number of cases the patients manifested a most singular apathy in regard to their condition, though their minds remained perfectly clear. Day after day we would go to their bedsides, be received with a cheerful, happy smile, and the quiet assurance that they were well, and had neither ache nor pain. All examinations were submitted to quietly as a part of our routine work or else with wondering incredulous thankfulness at what they deemed unnecessary caution. All this was when they were being consumed by fever, when the blood was coursing in heated torrents through every artery and vein, when dissolution had already set its cold seal upon their foreheads, when the apathy was already deepening into stupor, and the stupor into death. It was the most curious and the saddest mental condition which we ever witnessed. Human hopes, human desires, and human loves were not destroyed; but the unfortunate victim sank away from them as unconsciously as a happy child sinks to sleep, but alas, unlike the child, hers was the sleep that is to be eternal.

In the early stages the skin was hot and dry. Later it was moist, the perspiration appearing at irregular intervals. This was especially the case when there was reason to believe that the inflammation in the pelvic or peritoneal cavity had gone on to suppuration. In some instances slight pressure was followed by ecchymotic spots. In one patient in whom the milk did not disappear as was desired, the breasts were slightly irritated by the breast pump. The areolæ soon became swollen and livid. Both mammæ sloughed, and a large portion of one of the glands was destroyed. There was no constant or peculiar eruption, but a transient efflorescence which resembled the eruption of scarlet fever was observed several times. In one case this was situated upon the arm and forearm, and in two others upon the chest.

The heat of the skin was very great, and the calor mordax was as marked as it is in scarlet, typhus, or relapsing fevers. The temperature was carefully observed in a large number of cases.¹ The following observations are based upon an analysis of the temperature records of thirty-two patients.

¹ These observations were made by the various resident physicians who have served in the Hospital during the prevalence of the disease. Without making invidious distinctions, the author feels that he would be unjust not to mention his friend Dr. A. W. McCoy, now of Pittsburg, who was resident accoucheur during the spring of 1870, when the disease was more severe than it was after that time. The zeal of Dr. McCoy has enabled the writer to make this paper much more valuable than it would otherwise have been.

	Day after delivery.	Pulse.		Respiration.		Temperature.		REMARKS.
		M.	E.	M.	E.	M.	E.	
CASE I. Isabella I., æt. 24, single, multipara.	2	114	...	24	...	103 $\frac{3}{5}$	...	Pelvic pain and uterine tenderness in the morning; chill in the afternoon.
	3	90	90	18	18	101 $\frac{1}{3}$	99 $\frac{1}{2}$	Profuse green vomit.
	4	108	96	21	21	101 $\frac{1}{3}$	102 $\frac{3}{5}$	Lochia diminished.
	5	84	...	24	...	101 $\frac{1}{3}$	102 $\frac{3}{5}$	Has no pain; abdomen tender; sweating.
	6	72	108	21	24	100	104 $\frac{1}{2}$	Calor mordax; lochia suppressed; no pain; diarrhœa.
	7	72	96	20	21	97 $\frac{4}{5}$	101 $\frac{1}{2}$	Feels pretty well.
	8	72	78	21	18	97 $\frac{4}{5}$	101 $\frac{1}{3}$	
	9	70	78	18	16	97 $\frac{3}{5}$	99 $\frac{1}{3}$	
	10	60	60	22	18	98 $\frac{1}{2}$	99 $\frac{2}{5}$	
	11	68	66	...	18	98 $\frac{1}{2}$	98 $\frac{1}{2}$	This patient had a perfectly normal labour.
CASE II. Amanda W., æt. 38, primipara.	1	...	96	...	38	...	100	
	2	...	84	...	18	...	98 $\frac{4}{5}$	Slight chill in evening, after which was suddenly frightened, when became maniacal.
	3	84	114	18	...	98 $\frac{2}{5}$	98 $\frac{2}{5}$	Maniacal; has to be restrained.
	4	122	126	33	24	104 $\frac{1}{2}$	104 $\frac{1}{5}$	Delirious; abdominal tenderness; uterus much swollen: lochia normal in quantity; calor mordax.
	5	120	120	18	12	103 $\frac{2}{5}$	101 $\frac{3}{5}$	Mind clear.
	6	132	126	18	24	102 $\frac{4}{5}$	102	Lochia suppressed.
	7	126	120	30	30	103 $\frac{1}{5}$	103 $\frac{2}{5}$	Erysipelas of face; uterus swollen: lochia reappearing; no abdominal pain.
	8	112	120	...	...	103 $\frac{1}{2}$	101 $\frac{1}{5}$	Erysipelas spreading; abdominal and pelvic symptoms disappearing.
	9	120	114	18	18	...	102 $\frac{1}{2}$	Erysipelas not spreading.
	10	100	120	...	28	100	102 $\frac{1}{5}$	Erysipelas spreading; affects face and neck.
	11	114	108	20	24	98 $\frac{1}{2}$	101 $\frac{1}{2}$	Erysipelas spreading.
	12	100	108	24	24	98 $\frac{2}{5}$	103 $\frac{1}{5}$	
	13	100	102	24	24	100 $\frac{2}{5}$	97 $\frac{1}{5}$	Improving.
	14	84	102	24	22	98	98	
	15	90	96	18	21	98	101 $\frac{1}{5}$	
	16	114	84	24	...	99 $\frac{4}{5}$	96 $\frac{4}{5}$	
	17	...	...	...	...	98	98	
	18	102	...	30	...	98 $\frac{1}{5}$	98 $\frac{1}{5}$	
CASE III. Rebecca C., æt. 18, single, primi- para.	1	84	126	18	36	99	103	Fever, abdominal pain and tenderness; no chill; lochia normal in quantity.
	2	138	144	36	26	100 $\frac{1}{5}$	102 $\frac{1}{5}$	Calor mordax; diphtheritic patches on genitals; bright scarlatinoid eruption on arms and forearms; vomiting; swollen uterus; lochia nearly suppressed.
	3	120	126	7	26	100 $\frac{1}{5}$	101	Narcotized in the morning; 24 grs. of quinia and 24 grs. of opium daily.
	4	128	120	13	15	101	101 $\frac{1}{2}$	Under influence of opium.
	5	112	114	18	18	101 $\frac{1}{2}$	101 $\frac{1}{5}$	Complains of abdominal pain; opium gr. iij every two hours; urine retained and bloody.

	Day after delivery.	Pulse.		Respiration		Temperature.		REMARKS.
		M.	E.	M.	E.	M.	E.	
CASE III. <i>Continued.</i>	6	108	132	...	24	99.4	101.1	Skin moist, cool: lochia suppressed.
	7	114	126	18	18	100	101	Bowels confined; to have an injection.
	8	114	...	21	...	100	99	Pain (pelvic) in moving right leg.
	9	...	108	...	20	100	98	Bowels opened to-day for first time.
	10	130	96	24	24	97	99	
	11	102	...	30	...	98	100	Chill in afternoon; urine voided spontaneously to-day.
	12	96	108	32	30	99.1	93.3	
	13	90	96	24	34	100	99	Some pain and soreness of left mamma.
	14	114	120	42	30	102	102.1	Had a "nervous spell" this morning; left breast not swollen, but exquisitely tender.
	15	120	96	30	38	100	100.2	Left breast inflamed.
	16	102	102	30	24	98	100	
	17	96	84	24	24	98	100.1	Sharply defined, indurated mass, size of a lemon, in left mamma.
	18	78	90	20	24	99.1	100	
	19	90	90	18	24	98	100	
	20	88	84	24	30	98	100.1	
	21	84	84	24	18	98	99	
CASE IV. Annie K., æt. 20, single, primipara. Difficult labour. Delivered with forceps. Rupture of perineum.	1	...	72	...	18	...	100	
	2	...	90	...	24	...	101.1	One gr. of opium at night.
	3	96	96	24	30	102.1	102.8	All the signs of commencing puerperal fever.
	4	114	120	36	24	106.1	104.1	The disease fully developed; has been taking tinct. ferri chlor. gtt. xxx, with quinia sulph. gr. ij. every three hours since her confinement. Iron to be stopped; quinia sulph. and pulv. opii, ãã gr. ij every three hours; sixteen Swedish leeches applied to hypogastrium; lochia profuse.
	5	114	120	24	30	103	103.1	Great tympany; dry tongue; turpentine gtt. x every two hours; opium and quinia continued.
	6	112	114	28	26	102.1	101	Skin moist.
	7	112	120	28	24	101	102	Sleeps constantly; sweating profusely; has a profuse purulent vaginal discharge.
	8	108	108	30	30	102.1	103	Tongue dry; skin hot and dry; some milk in her breasts; a dose of oil which opened her bowels freely, the first since confinement.
	9	108	114	30	30	100.1	104	Vaginal discharge offensive and copious; Urine retained; disinfectant injections.
	10	108	...	32	...	103.2	100.4	Vaginal discharge less in quantity, and not so offensive; tongue moist.
	11	...	...	...	...	99	102.4	
	12	...	108	...	36	98.3	102	Passes urine spontaneously.
	13	108	96	30	30	98	101	Wants to get up.
	14	72	96	24	18	100	98	Opium and quinia four times daily.
	15	90	96	24	18	98.3	99.1	Opium to be given when she has pain.

	Day after delivery	Pulse.		Respiration.		Temperature.		REMARKS.
		M.	E.	M.	E.	M.	E.	
CASE IV. <i>Continued.</i>	16	90	96	24	18	97 $\frac{3}{4}$	99 $\frac{3}{4}$	All medicines except quinia stopped.
	17	72	84	20	18	98 $\frac{1}{2}$	100	
	18	88	96	20	18	98	100	
	19	96	78	24	24	98 $\frac{1}{2}$	100	
	20	90	90	24	21	100	100 $\frac{1}{2}$	Got up without permission this afternoon.
	21	90	96	18	24	99	101	
	22	88	84	...	18	99	99	
	23	90	72	18	18	97	99	
	24	90	114	24	21	99	102	
	25	66	114	18	21	97	102	
	26	86	84	15	18	102	99	
	27	78	72	16	18	98	98	
	28	78	78	21	18	97	99	
	29	80	72	18	18	95	99	
	30	78	90	18	30	97	102	This morning was profoundly collapsed, and for some time it seemed probable that she would not live. There was no discharge to account for the symptoms.
	31	80	90	25	18	98	99 $\frac{1}{2}$	
								After this, convalescence was rapid.
CASE V. Mary —, æt. 30, single, primipara. Labour easy. Perineum torn.	2	...	132	...	26	...	...	Five deep and four superficial sutures introduced in perineum in the morning, when she appeared to be well; late in afternoon had a chill.
	3	126	114	30	24	101 $\frac{4}{5}$	99 $\frac{4}{5}$	Carbolic acid internally and locally; has all the symptoms of puerperal fever.
	4	126	114	...	...	99 $\frac{1}{2}$	103 $\frac{2}{5}$	Two loose motions in afternoon; points where sutures inserted diphtheritic.
	5	124	132	...	30	103 $\frac{3}{5}$	104	Muttering delirium; calor mordax; great tympany; carbolic acid continued; a dose of oil; vomiting in the evening.
	6	126	138	30	18	103	104	Four stools during the night; in the afternoon diarrhœa with violent tormina and tenesmus; carbolic acid stopped; opium.
	7	126	138	20	24	104	104 $\frac{3}{5}$	Tenderness and induration of left breast; diarrhœa continues.
	8	138	150	16	18	102 $\frac{1}{2}$	104 $\frac{1}{5}$	Calor mordax, intense; diarrhœa; stools passed involuntarily; sutures removed from perineum; no union; diphtheritic.
	9	132	132	30	30	104	104	Tympany extreme; delirium; pain in knees; œdema of feet and ankles; ecchymosis on knees and legs; some small veins of legs occluded.
	10	140	132	20	30	104 $\frac{4}{5}$	103 $\frac{3}{5}$	Hippocratic countenance; delirium, subsultus; carphologia; ecchymosis on back; slight pressure produces ecchymosis.

	Day after delivery.	Pulse.		Respiration.		Temperature.		REMARKS.
		M.	E.	M.	E.	M.	E.	
CASE V. <i>Continued.</i>	11	132	144	30	26	101 $\frac{4}{5}$	104 $\frac{1}{5}$	Died in the night. <i>Autopsy</i> , six hours after. A gush of offensive gas on opening the peritoneal cavity; all the peritoneum inflamed; much lymph and $\frac{3}{4}$ viij of sero-purulent effusion. The uterus contained three fibroid tumours, one of which had suppurated. There was an abscess in the pelvis behind and to the left of pubic symphysis. Whole lining membrane of uterus covered with diphtheritic false membrane several lines in thickness. On mucous membrane of descending colon, just above sigmoid flexure, was an inflamed surface covered with diphtheritic false membrane. At several points the intestine was intensely inflamed, and looked as if it were about to become gangrenous.
CASE VI. E. E., æt 20. Very difficult instrumental labour. Severe post-partum hemorrhage.	1	...	120	...	18	...	100 $\frac{1}{3}$	Half a grain of morphia at bedtime.
	2	150	160	30	30	103 $\frac{1}{2}$	104 $\frac{1}{5}$	All the symptoms of puerperal fever; to have milk punch, beef-tea, quinia gr. ij, and gr. xxx of tr. ferri chlor. every two hours; morphia enough to relieve pain.
	3	170	156	30	6	104 $\frac{1}{5}$	...	Quinia and iron stopped in the morning, and given powdered opium gr. iij every two hours. At 12 M opium gr. iij; 1 P. M. gr. iij; vomiting. 3 P. M. morphia acet. gr. ss hypodermically. 4 P. M. tr. opii \mathfrak{m} 60 by bowel. 4.15, pulv. opii gr. iij. 5 P. M. morph. acet. gr ss hypoderm. 7.30 P. M. pulv. opii gr. iij. No sign of narcotism. 8 P. M. opium beginning to affect her. 9.30 P. M. profoundly influenced by the narcotics; pupils contracted; respirations six per minute; sweating profusely; intolerable itching of skin; is easily aroused, and converses intelligently when awakened. 10 P. M. resp. 8 $\frac{1}{2}$, pulse 156.
	4	138	150	18	30	102 $\frac{3}{5}$	103 $\frac{2}{5}$	At 3 P. M. this morning took pulv. opii gr. iss, and afterwards gr. iij every two hours.
	5	132	150	28	16	100 $\frac{1}{5}$	102 $\frac{1}{5}$	The opium continued with hypodermic injection, Magendie's sol. \mathfrak{m} iijss in evening; semi-narcotized; much abdominal pain; lies with legs drawn up; some milk secreted to-day.
	6	160	150	28	16	103	103	Lies with limbs flexed and head and shoulders high.
	7	150	138	21	20	103	103 $\frac{1}{5}$	In addition to the opium has had three hypodermic injections of \mathfrak{m} viij of Magendie's sol. to-day.

	Day after delivery.	Pulse.		Respiration.		Temperature.		REMARKS.
		M.	E.	M.	E.	M.	E.	
CASE VI. <i>Continued.</i>	8	126	150	24	24	100 $\frac{1}{2}$	103 $\frac{1}{2}$	Morphia gr. j every two hours.
	9	124	138	24	20	100	102 $\frac{1}{2}$	Morphia gr. j every two hours; cheerful and smiling.
	10	128	114	20	20	101	103	In addition to the morphia had a hypodermic injection of $\frac{m}{x}$ Magendie's sol. in evening.
	11	112	126	20	24	100 $\frac{1}{2}$	102 $\frac{1}{2}$	To-day passed some urine spontaneously, the first since her delivery.
	12	114	108	24	10	100 $\frac{3}{4}$	100 $\frac{1}{2}$	Tongue cleaning; two hard stools with pain; purulent vaginal discharge.
	13	114	120	34	30	101 $\frac{3}{4}$	102 $\frac{1}{2}$	Left lower half of abdomen and pelvis filled with an indurated mass which has sharp well-defined edges. While changing her clothing a pelvic abscess burst into the vagina. The pus, which had a very offensive odour, ran away in a stream. Ulcerations at fourchette which have been the seat of diphtheritic deposits are now covered with healthy granulations.
	14	...	126	...	30	102 $\frac{1}{2}$	105 $\frac{1}{2}$	Still continues to take morphia gr. j, every two hours.
	15	102	132	18	30	98 $\frac{1}{2}$	103 $\frac{1}{2}$	Had a severe chill in the afternoon.
	16	114	102	18	18	100 $\frac{1}{2}$	100 $\frac{1}{2}$	Quinia gr. xij at noon and in the evening.
	17	108	...	...	22	102 $\frac{1}{2}$	99 $\frac{1}{2}$	Since yesterday there has been but little pus discharged by vagina. Morphia gr. j, every four hours; quinia gr. xx in two doses.
	18	108	102	24	30	103 $\frac{2}{3}$	101 $\frac{1}{2}$	Feels well: two stools after an injection; quinia gr. x.
	19	108	101	24	18	101 $\frac{1}{2}$	101	Quinia gr. xx, produced nausea. Tenderness increased; skin dry; calor mordax; quinia stopped on account of nausea; morphia gr. j, every two hours: she got out of bed this morning, though forbidden to do so.
	20	108	124	26	24	102	100 $\frac{1}{2}$	
	21	120	...	...	24	102 $\frac{1}{2}$	102 $\frac{1}{2}$	
	22	...	120	...	24	100 $\frac{1}{2}$	102 $\frac{1}{2}$	Sweating profusely, clothing drenched.
	23	108	84	18	18	100 $\frac{1}{2}$	98 $\frac{1}{2}$	Has slept and perspired all day. This evening she is collapsed; her clothing and bed drenched. Skin cold; morphia diminished to gr. j, every four hours.
	24	114	120	18	17	102 $\frac{1}{2}$	101 $\frac{1}{2}$	Vaginal discharge greenish, offensive, and copious; quinia gr. xx.
	25	84	90	12	12	96 $\frac{1}{2}$	96 $\frac{1}{2}$	Collapsed; perspiration copious; extremities cold; quinia produced vomiting.
	26	88	90	12	36	96 $\frac{1}{2}$	100 $\frac{1}{2}$	Quinia stopped.
	27	90	96	15	24	100	100	Tongue clean; morphia to be given only when she has pain; Basham's mixture.
	28	78	78	21	24	97 $\frac{1}{2}$	99 $\frac{1}{2}$	Sitting up in bed.
	29	84	80	24	30	99 $\frac{1}{2}$	100 $\frac{1}{2}$	
	30	78	96	24	30	97 $\frac{1}{2}$	99 $\frac{1}{2}$	
	31	78	90	24	29	97	101	
	32	90	84	24	24	101	101	
	33	90	108	24	30	101 $\frac{1}{2}$	102	
	34	96	90	18	24	100 $\frac{1}{2}$	101 $\frac{1}{2}$	
								Purulent vaginal discharge continues, and labia have been œdematous from the first.

	Day after delivery.		Pulse.		Respiration.		Temperature.		REMARKS
	M.	E.	M.	E.	M.	E.			
CASE VI. <i>Continued.</i>	35	120	102	30	28	100	102		
	36	90	102	28	24	100	101		
	37	108	114	24	30	100	103		
	38	102	114	24	24	101	103		
	39	108	90	34	20	98	102		
	40	120	102	18	22	102	100		In morning vomited profusely and without obvious cause, after which her bowels were open, and the vaginal discharge increased.
	41	90	96	18	24	98	101		Less pus flowing by vagina to-day.
	42	96	104	20	30	100	102		
	43	96	...	24	...	99	...		
	44	114	...	24	...	100	103		Vaginal discharge nearly ceased.
	45	114	132	20	...	100	104		
	46	102	114	30	30	100	102		Induration in left hypogastric and lumbar regions continues.
	47	132	150	24	26	102	104		Diarrhoea, with pelvic pain and tenderness.
	48	145	120	24	24	103	99		Vaginal discharge increased.
	49	132	140	21	24	102	103		About noon to-day, when reaching up to close a window, the abdomino-pelvic abscess opened into the vagina, and about a quart of offensive pus escaped. The pain was so severe as to produce fainting.
	50	126	136	18	20	101	102		Induration in the abdomen is extending; the upper border is horizontal and three fingers' breadth below the umbilicus. On right side it extends four fingers' breadth to right of median line. The mass is <i>obscurely resonant</i> on percussion. Vaginal examination: the pelvis filled with an inflammatory deposit which is continuous with the abdominal tumour. Uterus pushed back into hollow of sacrum. On left side of os is an orifice which will admit index finger, and through which the pus flows.
	51	114	102	24	18	98	99		Profuse discharge of pus from vagina.
	52	114	126	24	19	100	102		Severe paroxysm of pain in evening, causing syncope.
	53	120	120	26	24	102	101		
	54	120	114	30	24	100	99		
	55	120	120	24	22	100	100		
	56	126	126	24	30	100	101		
	57	116	126	30	28	100	102		
	58	120	...	18	...	100	...		The vaginal discharge continues. Above the pubes there is a small fluctuating swelling which communicates with the abdominal and pelvic cavities. On the 65th day of the disease she came under the care of my colleague, Dr. George Pepper. A few days later pus began to flow from the opening over the pubes. This and the vaginal opening both continued to discharge for several weeks, when both closed, and the woman got perfectly well. When last seen, she supposed herself to be several months pregnant.

In studying the preceding tables it is at once apparent that the temperature was liable to repeated and extreme variations during the progress of the disease, and especially during its latter stages, in cases which terminated in recovery. At first sight the records seem to present the utmost confusion, but upon careful study a general law can be evolved, and it will be found that they are strikingly alike in certain particulars. This study is of some importance, as a change of temperature is sometimes the first indication of improvement, while in fatal cases care must be exercised or erroneous conclusions may be drawn, and a favourable prognosis be given when the disease is hurrying towards a fatal issue.

The rise of temperature at the commencement is sudden, as is well illustrated in Cases II., III., and VI. In Case II. it reached its maximum in twelve hours, and on the morning of the first day of the disease. This is likewise true of the third case, in which the disease seemed to set in as soon as labour terminated, and in which the temperature was 99° at noon, while in the evening it was 4° higher. The last remark applies with equal force to Case VI., in which the temperature never fell after delivery, but rose steadily during the succeeding twenty-four hours. In Case I. the ascent was just as abrupt, since it reached nearly 104° on the morning of the second day after delivery. The same character marks the records of the body heat in both fatal and favourable cases—now in the writer's possession, and not here published.

After the primary rise of temperature the records show that it remained elevated for a variable but usually short period. If the disease was mild a decline occurred almost immediately, as in Case I., in which the fall commenced on the morning of the second and continued until the evening of the third day after delivery. In Case II. the fall was steady until the evening of the second day of the disease, and the fifth after delivery; in Case IV. it continued until the morning of the seventh, and in Case VI. the decline was steady during the fourth and fifth days. These cases all terminated favourably, and in all of them it is noticed that the temperature did not fall to the healthy point, and that an elevation, more or less abrupt, succeeded the decline.

To this Case III. appears to be an exception, as it was in other particulars, though she was one of the sickest patients who recovered in the hospital during the epidemic.

One very important point should be noticed here. This decrease in the heat of the body is no indication that the disease is arrested, or that the attack will be a mild one. No matter how much the condition of the skin may be improved, the pain and tenderness be diminished, or the cheerfulness of the patient be increased, it may be but the lull before the coming storm which will carry off its unfortunate victim almost before a hand can be raised to save her. The truth of this statement is illustrated by Case V., in which the temperature declined steadily during the whole of the third

and until the morning of the fourth day after delivery. During the succeeding twelve hours it rose abruptly 4° , but did not reach its maximum until the morning of the 10th day after delivery.

The same changes occurred in other fatal cases. In one the thermometer registered 101° on the morning of the second day after delivery. Twenty-four hours later it was $103\frac{1}{5}^{\circ}$, and her pulse was 134 per minute. Immediately afterwards the temperature began to decline, and on the morning of the fourth day after confinement it was $100\frac{3}{5}^{\circ}$. The history of this patient is indelibly impressed upon my mind, since I allowed myself to be too much influenced by the apparent improvement. With the diminished body heat, the pain and tenderness almost entirely disappeared, the skin became cool and moist, and the calor mordax totally subsided. But notwithstanding these changes it was noticed that the pulse was not less frequent, nor more strong, and that the patient's countenance had not improved, but was sunken, pale, and ghastly; her smiles had a wierd, incongruous look that it is as impossible to describe as it is to have it effaced from one's memory. Though we hoped otherwise, the temperature immediately commenced its second ascent, which continued until the next morning, the fifth day after delivery, when it had reached its maximum of $105\frac{1}{5}^{\circ}$ Fah. Though a second decline commenced at this time, the condition of the patient grew worse until she perished two days later.¹ An examination of the record of Case V. shows that in this patient, in whom the disease was fatal, the temperature declined three degrees from the morning of the tenth until the morning of the eleventh day after delivery, but there was no improvement in the other symptoms, and death occurred during the night of the latter day. Another noticeable character of the same record is the absence of any striking diurnal variations in the heat of the body. This absence of diurnal variation in the temperature was noticed in all fatal cases of the disease the temperature of which was recorded.

This shows what is, probably, the most important prognostic indication gained by the use of the thermometer in this disease. An examination of all the tables, excepting the third, will show that after the second rise of temperature there was a more or less abrupt decline, which was

¹ The following is the record of the pulse, respiration, and temperature of this patient. On the evening after delivery her skin was warmer than natural and her abdomen tender:—

	Pulse.		Respirations.		Temperature.	
	Morn.	Evening.	Morn.	Evening.	Morn.	Evening.
2d day after delivery,	120	140	28	30	101°	102°
3d " " "	134	124	34	28	$103\frac{1}{5}^{\circ}$	$101\frac{3}{5}^{\circ}$
4th " " "	134	124	28	30	$100\frac{3}{5}^{\circ}$	$102\frac{1}{5}^{\circ}$
5th " " "	140	132	30	30	$105\frac{1}{5}^{\circ}$	$104\frac{4}{5}^{\circ}$
6th " " "	138	138	35	32	104°	$103\frac{2}{5}^{\circ}$
7th " " "	132		10		$102\frac{3}{5}^{\circ}$	

followed by diurnal variations of from three to seven degrees. The appearance of these was anxiously looked for, and when they were regularly established, we felt reasonably certain that the patient could not perish in the acute stage of the disease, though she might possibly succumb later from the effects of suppuration and the accumulation of pus in the abdominal and pelvic cavities. These daily changes are well illustrated in Case I. This patient, who suffered from peritonitis, undoubtedly recovered without suppuration. The fourth case illustrates the regular and gradual decline of both evening and morning temperature, but the body heat did not always, and indeed it very rarely, maintained this regularity in its decline until it reached the normal standard. In one instance it had steadily diminished from nearly 104° on the evening of the fourth day until it was $97\frac{4}{5}^{\circ}$ on the morning of the ninth day. During the succeeding eight hours, and without any obvious reason, it bounded up again to 103° , a difference of about 5° Fah. A still more remarkable change occurred during the ensuing night, and on the morning of the tenth day the thermometer registered only $96\frac{4}{5}^{\circ}$ Fah. During the next two days it remained below the normal, after which the healthy standard was reached and the convalescence proceeded rapidly and uninterruptedly. This rapid decline of heat was attended with the most profound depression, during which the patients lay perfectly quiet, almost utterly unable to move, pallid, cold, the surface drenched with perspiration, which soaked their clothing and beds, and a feeble, small, and sometimes an intermittent or irregular pulse. In the case alluded to above, the collapse was almost as severe as in cholera, which it closely resembled, except in the absence of blueness of the surface. The truth would probably be reached better by comparing it with the defervescence of the paroxysms of relapsing fever. In the first case in which this extreme decline occurred, we were alarmed for the patient, but every woman recovered in whom it occurred, while it was not noticed in a single instance in which the disease terminated fatally.

The period of the disease, when this symptom manifested itself, varied. In Case I. it occurred on the morning of the seventh day after delivery, when the temperature was $97\frac{4}{5}^{\circ}$; but the lowest point was reached on the morning of the ninth, when it was $97\frac{1}{2}^{\circ}$. In Case II. it fell on the thirteenth day, but the minimum of $96\frac{4}{5}^{\circ}$ was not reached until three days later. In Case III. the minimum was reached on the tenth day; but the fall was not extreme, and the depression attending it was less than in other cases. In the fourth patient a disposition for the temperature to fall below the normal was noticed on the fourteenth day, was more fully developed on the sixteenth day, occurred finally on the twenty-third, and was repeated on the twenty-ninth day, when the axillary temperature was only 95° Fah. This was the minimum noticed during the epidemic. In the sixth patient, the record of whose remarkable history extends over a period of more than two months, the fall took place on the twenty-third day, when her tem-

perature was $95\frac{3}{5}^{\circ}$ Fah. An increase of 6° immediately followed, to be succeeded by a second decline on the twenty-fifth day. The depression attending the second decline was profound, and lasted for twenty-four hours.

In all of these patients it will be noticed that this rapid decline was preceded by a greater or less elevation of temperature. When the disease was mild this was apt to be abrupt (Cases I. and II.), and was attended with high fever, and more uneasiness in regard to the issue of the disease than the patient had experienced during the preceding illness. Indeed, it seemed as if the distemper made one last effort to overwhelm its victim, and then gave up the conflict exhausted and defeated.

This sudden and extreme decline of temperature did not occur constantly. The peculiarity was chiefly noticed during the early part of the outbreak, before the removal of the patients from the hospital to the temporary pavilions in the fields. During the remainder of the epidemic the temperature rarely fell much below the normal, while we are not aware that collapse occurred in any case. It is worthy of notice that this sudden decline was unattended by any discharge excepting from the skin, and that it sometimes occurred in cases in which we had reason to believe no pus had accumulated in the pelvic or abdominal cavities.

The heat of the body, as registered by the thermometer, did not bear any proportion to the calor mordax, which was a striking symptom, and was as marked as it is in other diseases in which the temperature is usually higher.

The conclusions which may be drawn from the observations of the temperature of puerperal fever in the epidemic which we are describing are the following:—

1. The ascent in the first instance is abrupt, the temperature reaching 104° or 105° in a few hours.

2. This is followed in from one to two days by a decline in which the heat approaches more or less nearly to the normal standard without reaching it.

3. This defervescence occurs in both favourable and fatal cases, and it does not afford the slightest ground for a favourable prognosis.

4. In fatal cases there may be a regular, and apparently a favourable decline of temperature for one, two, or three days before death; but unless this change is associated with corresponding alterations in the pulse, respirations, and appearance of the patient, it indicates that the disease will rapidly run on to a fatal issue.

5. In favourable cases one of the first indications of the approach of convalescence is an increase in the morning remission, which continues to become more marked from day to day, sometimes giving the record of temperature the appearance of that produced by a quotidian intermittent fever.

6. After these diurnal vacillations have become marked, varying from

3° to 6° Fah., there is a tendency for the morning temperature to decline below the normal, sometimes to 95° Fah., with the symptoms of profound collapse.

7. In some cases of the disease in which convalescence is retarded by suppuration within the abdominal or pelvic cavities, the temperature is liable to increase or decline suddenly, and in these cases the thermometer furnishes the most reliable indications of the danger of the patient, which has not passed until the temperature has regained the normal standard.

8. When suppuration occurs, and pus accumulates in the pelvic cellular tissue or the peritoneal cavity, the normal temperature may not be regained until the end of the ninth or tenth week of the disease.

A number of the patients suffered from inflammation of the joints identical with that which occurs in surgical pyæmia. Any of the larger articulations may be involved between the third and twelfth day.

Before dismissing the consideration of the symptoms of this disease, it may not be amiss to say a few words in regard to the discharge of pus from the abdominal and pelvic cavities. In the sixth case, immense quantities of pus were discharged by the vagina. When the abscess broke, almost a quart flowed away. Without doubt it came from the peritoneal cavity, as the quantity was too great to have been contained in the cellular tissue of the pelvis. In another patient, in the fifth week after her confinement, and after she had gained sufficient strength to leave the hospital, an opening was formed in the roof of the vagina, and gave egress to a large quantity of pus, which soiled all her clothing and deluged her bed. On examination, an orifice sufficiently large to admit the index finger nearly to the second joint was found on the right side of the uterus, which organ was movable, and as large as that of a woman in the fourth month of pregnancy.

The discharge of pus from the peritoneal cavity, through an opening in the abdominal walls, as it occurred in the last case related, is unique in our experience. Gordon, however, relates two cases which were noticed in the epidemic at Aberdeen at the close of the last century. In both of these the opening occurred at the umbilicus.

Death from this disease may occur at any time between the third and twelfth day. If life is prolonged beyond the latter date, recovery is the rule. Death nearly always results from asthenia.

Diagnosis.—Much space will not be occupied in the consideration of this subject. The symptoms are usually sufficiently well marked to show that the patients are labouring under a severe disease, and that they have been profoundly impressed by some poison.

It is to be remembered that the disease was usually attended with more or less peritoneal inflammation, but throughout the epidemic the ordinary symptoms of peritonitis were absent. The patients complained of no pain; with a few exceptions the tenderness of the abdomen was not extreme; they

bore the weight of the bedclothes without murmuring; lay with their limbs extended, and almost always moved them freely; had full, round, bounding, and then weak, compressible, not small, hard, corded pulses. All these peculiarities contrast strongly with those which marked the variety of the disease that occurred in the same wards in 1865. At that time it began as suddenly, but the pain was excruciating, the patients lay with their limbs flexed, and we had to employ mechanical contrivances to support the bedclothing. The pulse was hard, small, and corded. The absence of the characteristic signs of the inflammation of the peritonæum was one of the most marked features of the epidemic, and it required constant watching to avoid being misled. We cannot avoid relating the following history to illustrate the difficulties of diagnosis in some of these cases

CASE VII. Secondary Latent Peritonitis, Pleurisy, and Pericarditis; Death; Autopsy.—Mary ———, æt. 16, single, primipara, very strong, robust girl. Delivered April 15th, by Hodges' forceps. Head in left occipito-anterior position; rotation complete, and the head at the outlet when they were applied. They were used not because the patient was exhausted, but because the pains were feeble, and she refused to bear down.

16th. Was feverish, and complained of abdominal pain.

17th. The fever was high, and she had tympany with slight tenderness in the left iliac fossa; pulse feeble, compressible, 120 to 130; furred tongue, disposed to become dry; no vomiting; and bowels constipated. These symptoms remained unchanged until the 20th, except that her pulse increased in frequency. On the 20th she complained of pain under the right mamma. Pleural friction, with subcrepitant rales, and slight dulness was detected on the right side. There was no abdominal tenderness. She bore the roughest manipulations of the abdomen without any complaint, lay with the limbs stretched out, and moved them freely. 21st she had more dyspnœa, and there was pleural friction on the left side. She now had considerable pain in breathing, but there were no abdominal symptoms. She gradually failed, and died the next day.

The *autopsy* revealed intense inflammation of the peritoneum. Great masses of fresh yellow lymph were to be seen everywhere. The liver, spleen, uterus, and ovaries were literally buried in it. The right pleural cavity contained a pint of fluid. The lung was covered with lymph. There was also some lymph on the base of the left lung, and on the visceral layer of the pericardium.

This was by no means a single instance in our experience. We have so frequently met with latent peritonitis not only in the puerperal woman, but also in men and non-puerperal females, that nothing would induce us to conclude that inflammation of the peritonæum did not exist when a woman presented the evidences of puerperal fever during an epidemic of that disease. The records of more than one unfortunate case now in our possession fully bear out this statement. The absence of pain and tenderness was not of the slightest value as an indication that this condition did not exist, and the diminution or even the entire disappearance of these, when they had previously existed, was not an indication that the disease

was about to take a favourable turn. On the contrary, if they had been well-marked, and then disappeared without an amelioration of the other symptoms. diminution of the tympany, fall in pulse with increase of strength, and an improvement in the appearance of the patient, the disease generally terminated in death in a short time.

Associated Diseases.—In the study of an epidemic of puerperal fever it is exceedingly important to examine the diseases which accompany it. It was long ago remarked that an outbreak of this affection in the lying-in wards of a hospital is likely to be accompanied by some grave disorder among the medical cases in the same hospital, and that the wounds of surgical patients heal slowly and operations do but poorly.

In this instance we have to record an entirely new association of diseases with puerperal fever. It commenced almost simultaneously with the admission of relapsing fever into the medical wards, and it was accompanied with a very peculiar epidemic of pneumonia among the children in the wards. This did not affect the children of the women who suffered from the fever, but those who were older and whose mothers were perfectly healthy. What relation the cases of puerperal fever bore to these two epidemic diseases we shall not venture to say. The disorder which we have been describing was certainly not relapsing fever in the puerperal woman. It is exceedingly doubtful whether that affection would be thus deprived of its characteristic features by this condition. Though it might be modified, it is not likely that it would entirely lose its identity.

The connection between the pneumonia among the children and the fever among lying-in women may have been more close. The influences by which they were surrounded were identical, and in both diseases the temperature was subject to singular variations. The pneumonia was very liable to be latent, and save in its physical signs the ordinary symptoms of this pulmonary affection were nearly wanting.

There was not the slightest evidence that the pneumonia was contagious, or that one of these sick children could transmit puerperal fever to the lying-in woman by contact.

In the second patient whose temperature has been recorded in this paper, an attack of erysipelas of the face, which appeared to supplant the abdominal disease, is mentioned. Too much has already been written upon this subject to make it necessary to more than state the facts in regard to the association of these affections in this epidemic. The first case of metria occurred on February 7th, 1870. The first woman who had erysipelas was delivered by Dr. Spencer, on the 24th of January, 1871, nearly a year after the outbreak of the disease. The erysipelas commenced the morning after her confinement, and affected the face. She was immediately transferred to the medical wards, where she passed through a rather severe attack of the disease. The second case was a girl who was delivered on the 1st of February, 1871. The head and face were involved,

and the affection set in immediately after confinement, and pursued the ordinary course. Neither of these women had the slightest symptom of any form of metria. This is an important fact, because it is not unreasonable to suppose that the presence of this disease would increase the dangers of lying-in, since there seems to be no just reason to doubt that a close relation exists between some varieties of puerperal fever and erysipelas. Indeed an attack of erysipelas seems to protect a patient from puerperal fever. Shortly after the recovery of these patients, my friends, Drs. J. H. Hutchinson and E. W. Watson, mentioned the fact that they were each treating a case of erysipelas in a puerperal woman, and that neither had any symptoms of metria. Several similar cases have been reported in the *British Medical Journal* during the past year.

Throughout the spring of 1871 there was a strong tendency for erysipelas to become epidemic in the ward. The slightest wound was followed by its appearance. An injury to the child during delivery, a slight excoriation from instruments which would ordinarily pass unnoticed, was almost certainly followed by fatal erysipelas, yet, strange to say, in no instance did the disease attack the umbilicus. The cords all separated without any unusual symptoms. Immediately before the wards were temporarily abandoned the nurse herself became the victim of angiolencitis and erysipelatous inflammation of the leg and thigh following a slight wound inflicted while cutting a corn.

It is an interesting fact that this outbreak of metria was not produced by erysipelas, but, on the contrary, seemed to produce a tendency to the latter disease among infants and non-puerperal patients inhabiting the same apartments.

Throughout the whole period during which the fever prevailed in the wards there were no cases of diphtheria under care in the department. Nor were there any other zymotic diseases except those mentioned until Oct. 2, 1873, when a case of malignant scarlatina was admitted into the Children's Asylum which has no connection with the obstetrical wards except through the medical officers. The patient was under the care of my friend, Dr. John Guiteras, who was at that time resident accoucheur. On Oct. 3d Dr. Guiteras delivered a woman who had an easy labour. Forty-six hours later she had a profound chill, which was followed by the characteristic symptoms of scarlet fever. The patient died two days later. This was the only case of this disease that occurred in the obstetrical wards during the outbreak of metria.

Etiology.—To contract the disease which has been described it is necessary that septic matter be brought in contact with the puerperal woman, and that there be some abraded or wounded surface by which the poison can enter the system. There is no evidence to warrant our concluding that septic matter enters the circulation by the skin, lungs, or intestinal canal. An uninjured person may be subjected to its influence, and, through

changes in the air he breathes, it may produce some effect upon his nutrition, but septicæmia will not follow unless the septic matter enters the circulation by a wounded surface.

Unfortunately all women newly delivered present injured surfaces for absorption. They are chiefly the area to which the placenta was attached, lacerations of the cervix uteri, the vagina, the fourchette, and the perineum. The placental insertion is probably but rarely the channel by which septic matter enters the blood of a puerperal patient. It is located so high up that the poison is not brought in contact with it, either by the atmosphere or the hand of the accoucheur. Injuries of the cervix, vagina, and perineum are much more important, because, being lower in the genital passage, they afford the poison germs ready access either by the air or through inoculation by the woman's attendants.

These expressions indicate, at once, how much importance is to be attached to traumatism in the production of this disease. For at least two centuries the minds of medical men have been occasionally reverting to this cause, until, at the present time, the doctrine is generally accepted.

The puerperal woman may generate the poison within herself, or she may receive it from without. The first of these two classes of cases, or those in which the disease is autogenetic in its origin, appears to be rare. Only one undoubted example has been observed by the writer. This was a woman who was delivered of a dead and putrid child. The waters when discharged were highly offensive. Unfortunately for the patient, her labour was considerably delayed by constriction of the vagina, the result of a previous inflammation. This was not overcome without injury, and a short time after labour septic poisoning set in and the patient soon died. Prof. Barker, in his work on *Puerperal Diseases*, mentions two cases which were similar to this one, but the birth of a dead decomposing child rarely produces puerperal fever.

Auto-infection is rare, because wounds of the genitalia must be in a certain condition to absorb septic matter. To Billroth belongs the credit of demonstrating that septic poisons will not enter the blood by a wound which is not fresh. If the surface be granulating there is no danger of absorption unless the septic matter has the power of destroying the granulations and laying bare the bloodvessels and lymphatics. In consequence of this many women escape who would otherwise suffer from the disease. It requires some time for parts pressed upon to slough, or for portions of membranes or placenta which have been retained to become putrid and produce the septic poison. The result is, that before the latter is generated the wounds produced by labour have either healed by first intention or are covered by granulations so that the system is protected. If the infection is autogenetic, the disease usually begins later than if it is heterogenous in its origin. During the epidemic which has been described

the disease generally set in too soon after delivery to be of autogenetic origin.

From without the puerperal woman may receive septic poison from two sources. It may be carried to her on the hands or clothing of her accoucheur or nurse, or she may receive it from the contaminated atmosphere in which she lives.

The consideration of the first of these sources of infection reopens the question of contagion, a subject which has been discussed very frequently, and often with more warmth than was consistent with professional dignity. For the last quarter of a century the almost unanimous verdict of the profession has been in favour of the contagiousness of the disease. There have always been some notable exceptions, however. Hodge and Meigs, during their lives, continued to combat the doctrine, and to-day, while the contagiousness of the disease is not denied, the tendency of the medical mind is towards the position of these illustrious authorities.

The present epidemic has furnished no facts which tend to prove puerperal fever contagious. During the early part of the epidemic, from January, 1870, to June, 1871, the four accoucheurs of the hospital were all on duty, and came in contact with the disease every day. They were all actively engaged in private practice, yet none of them saw any cases of it among their patients outside of the hospital.

When the disease appeared in the city, as it did some time later, it did not spread from the hospital, but sprang up spontaneously.

During the same period the same resident-accoucheurs were on duty in both the white and coloured obstetrical wards. The latter are situated in the same wing of the building, but on the first instead of the third story. The only communication between the two departments is through the medical officers. This was necessarily constant, but the fever did not appear among the negro patients until the white ones had been removed to the pavilions and it had temporarily disappeared in the hospital.

When the deliveries in the hospital proper were suspended on June 1, 1871, one of the resident-accoucheurs had charge of three women desperately ill with the disease. They all suffered from retention of urine, necessitating the use of the catheter several times a day. That gentleman never ceased his ministrations either to his patients with the fever in the hospital proper, or those in labour in the temporary wards. Yet he never carried the disease to the latter.

It cannot, however, be denied that puerperal fever is inoculable. It is contagious as vaccine disease and syphilis are. In this strictly limited sense the doctrine of contagion is of the highest importance. If not recognized, the path of the physician may become a highway of sepulchres, and his ministrations which should be a blessing may be changed to a curse.

Granting that this disease is manually contagious, it is important to

determine the degree of this. In the bitter disputations in regard to puerperal fever we are gravely assured that this is great, in fact so great that it is quite without parallel in the history of human distempers, and instance after instance of the disease following a certain practitioner till he was forced to cease in his ministrations on the sick is appealed to in support of this opinion. It is a singular fact, that these examples are the same quoted over and over again, and that when our poet-doctor, Holmes, collected the facts in favour of contagion, he got the most of them; and that when he hurled his missile into the camp of the anti-contagionists they had exhausted almost the whole force of their opponents. Since then few such examples have occurred. Kennedy, indeed, describes the rounds of his student from the north of Europe as being "like the path of the pale horse in the Apocalypse," but this the advocates of inoculation would claim as a striking example of their modified views.

We cannot longer subscribe to the doctrine that, no matter what care the physician may exercise, this poison, like an evil spirit, will cling to him, causing distress and death wherever he goes. We cannot admit that it is so potent that no efforts at cleanliness or exposure to the air will destroy it. The profession is calmly asked to believe that the occurrence of puerperal fever in the practice of Dr. Rutter, formerly of this city, was due to contagion. What other poison is there that he could not have destroyed by frequent ablution, by a self-enforced quarantine, of days and weeks, by having his head and face shaved, changing all his clothing, even to his pencil? Dr. Rutter did all this, yet puerperal fever followed him wherever he went, till, worn out and disappointed, he left Philadelphia a disheartened man.

What other poison is there that will adhere to one man and not another, following its victim as if it were the result of a premeditated plan? Dr. Meigs saw Dr. Rutter's cases, but he did not have puerperal fever in his practice. It is too much to ask us to conclude that these peculiarities, which are without parallel in the history of disease, are due to contagion alone. Acknowledging, freely, the influence of manual contagion, there is yet something to be explained in relation to the production of this terrible affection.

A puerperal patient may be contaminated by septic poison through the air. This is clearly proved by the fact that not only the women who were delivered in the hospital were affected, but that those whose children were born outside and who were admitted immediately after confinement enjoyed no immunity from the disease. The complete cessation of the disease upon removing the patients from the infected wards to the pavilions outside illustrates the same view. We can no longer doubt the atmosphere of a ward may become impregnated with the poison of this disease. This opens the consideration of the propriety of aggregating a considerable

number of women during the puerperal state, a question which has been very warmly discussed in Great Britain during the last few years.

The records of some hospitals support the opinion that they had better never have been built. Year after year women have sought them during the most trying moments of their existence, hoping to find rest and succor within their walls. Year after year the wail of their distress, the cry of their pain, the strange incoherency of their delirium have called loudly for their relief. Year after year the terrible record of their increasing deaths has appealed strongly for investigation, till at last one man, bolder than the rest—a former master and governor of the Dublin Lying-in Hospital—rose up and asked whether it would not have been better for these poor women to have been left to the cold charity of the world than to have obtained admission into these institutions. The dismal groans of dying women and the mournful wail of motherless children in the crowded wards of the hospitals of two great continents loudly demanded Dr. Kennedy's protest.

All remember the storm which raged about him, and what warfare of words followed, a contest more bitter than the most sanguinary encounter. There stood the advocate of the obnoxious doctrine, while seventeen physicians waged an uneven battle against him during nine separate nights. Then quietly and with dignity he made his reply, reiterating his opinions and supporting them by new facts. Four years have passed by since then, and we can now turn back and weigh the arguments of both parties. The result of such a consideration cannot but carry the conviction that Dr. Kennedy had good grounds for his judgment; and that while he has probably gone too far in his condemnation of lying-in hospitals, there is no doubt that many of them have year after year been but slaughter-houses in which the lives of a number of unfortunate women have been needlessly sacrificed. If any one doubts this, he has but to study the dark records of all of the Parisian lying-in hospitals, whose walls, if they could speak, would tell tales of woe and suffering which are too horrible to contemplate.

Pathological Anatomy.—As has already been stated, this disease is believed to have been septic in its origin, therefore, not differing from affections of the same kind occurring in non-puerperal women and in males, except as it is modified by the puerperal condition. The history of the epidemic, inasmuch as it shows that women injured during labour by lacerations of the vagina, fourchette, or perineum are by far most likely to suffer from the disease, seems to establish the fact that traumatism has much to do with its production by opening a channel through which the septic poison finds its way into the system.

Septic matter not only produces high febrile reaction when admitted into the system by a wounded surface, but likewise gives rise to inflammation of the various tissues with which it comes in contact, whether it is

applied to them directly from without, or reaches them through the medium of the circulation. Granting the correctness of these statements, the anatomical alterations which will be described become intelligible, while their consideration somewhat in the order of their production will render them more easy to understand.

The injuries of the perineum, vulva, vagina, or cervix are found inflamed with elevated edges, and presenting various appearances, according to the duration of the disease. If the patient has succumbed early, they are covered with diphtheritic false membrane. If later, this has separated, and the surface presents a dark, pultaceous, semigangrenous appearance. In some cases the false membrane extends to a greater or less distance beyond the lesion in the tissues, and in two instances it lined the whole vagina and interior of the uterus. It may vary from a mere film to a tough membrane several lines in thickness, and is usually of a dirty, yellowish-gray colour. The mucous membrane of the vagina, whether diphtheritic or not, is, as usual, somewhat swollen, injected, and in the condition known as catarrhal inflammation. This change, which exists to a greater or less extent in perfectly healthy parturient women, is increased in this disease.

Starting from, and having their origin in, wounds of the perineum, vulva, or some point low down in the vagina, more frequently than from lesions of the cervix uteri, are certain anatomical changes of the highest degree of importance. These are inflammation of the connective tissue. Beginning at the point at which the poison gained admission into the system, the connective tissue becomes congested and infiltrated with a gelatinous exudation, which may be almost transparent, or stained with the colouring matters of the blood. Mingled with this substance are cell elements, probably resulting from migrating white blood-corpuscles as well as from increased differentiation of the connective-tissue elements. From the point at which this process starts, it extends upwards until it involves much or even all of the connective tissue in the pelvis, and even the sub-peritoneal connective tissue of a considerable part of the abdominal cavity, especially that in the lower posterior parts of it.

At points where the cell elements are produced rapidly and profusely, there is very visible swelling, which formed the pelvic tumours detected during the life of the patient. These masses may be situated in several places. They are most frequent in the broad ligaments, the peritoneum covering which, having been greatly distended during pregnancy, is now again easily stretched by inflammatory exudation. Next in frequency, they are found at the sides of the pelvis in contact with the bones; and lastly, low down by the cervix uteri on either side. In the first two locations they attain the largest size, but of all are best developed in the broad ligaments, where they vary from mere points to masses the size of an orange. The appearances which these formations present upon section

vary with the duration of the disease before death. If the patient perished early, they were somewhat irregular and nodular in outline, and hard to the touch. The cut surface in the first stage was red, with yellowish points here and there, just as are found in any other phlegmonous inflammation. If the case had progressed further, and the cells had undergone changes preparatory to suppuration, the section sometimes presented a curious laminated appearance. In two women who perished with these swellings by the side of the neck of the uterus, the section showed the inflammatory mass to be composed of a series of laminæ from an eighth to a quarter of an inch wide. One set of these were yellow and cheesy-looking, though not friable, and they alternated with layers of deep bluish-red tissue of about the same width, which were parallel with them. The disease having progressed to suppuration, these swellings were transformed into abscesses containing thick or thin, yellow or dark-coloured, ichorous pus.

The condition described all recognize as cellulitis or parametritis, which rarely existed alone, but was usually associated with more or less pelvic or general peritonitis. The latter presented its usual appearances. The peritoneal cavity rarely contained much fluid. A few ounces of serum were usually found in the pelvis. It was sometimes clear, at others bloody, or even purulent. The quantity of lymph varied much, in some cases being very small, while in a few the amount seemed to be only limited by the capacity of the cavity to contain it.

The peritonitis in some of these cases was doubtless due to simple extension of inflammation by continuity of structure from the pelvic cellular tissue. Thus it becomes the sequela of parametritis. But this is by no means its universal origin. In some cases it no doubt arises from septic poisoning of the blood, just as pleurisy and inflammation of the cerebral membranes are produced in similar cases. This illustrates the statement already made, that septic matter has the power not only of producing fever, but local inflammation, just as the poison of Bright's disease of the kidneys. Pleurisy was by no means an uncommon complication, especially in fatal cases. In most instances it appeared to have an ichoræmic origin. In a single case it may have been produced by extension from below upwards through the diaphragm. It presented the usual phenomena of that disease.

In a few cases there was pericarditis externa, associated with left pleurisy, and in one instance general inflammation of the pericardium was noted.

No example of inflammation of the membranes of the brain was noticed during the epidemic. In 1865 a woman died in the hospital of puerperal fever, in whom not a single serous membrane of the body escaped inflammation.

The discussion of peritonitis as a result of parametritis has led to the description of the lesions of the other serous membranes, which have been

disposed of thus parenthetically as a matter of convenience. Another consequence of inflammation of the pelvic connective tissue is cellulitis of the lower extremities, which extends outwards from the pelvis along the sheaths of the great nerves, lymphatics, arteries, and veins, producing thrombosis, and in some cases phlegmesia alba dolens. But two genuine cases of the latter occurred, but induration of the connective tissue on the anterior surface of the thigh with thrombosis of the saphenous vein was more frequent.

The uteruses presented different conditions. In some subjects it appeared to be perfectly healthy, and only a few times were any very serious changes discovered. In two instances, as already stated, the interior of the organ was found entirely covered with diphtheritic deposits. It was usually entirely free from these at the time the *post-mortem* was made, but it was rare to find evidences of endometritis altogether absent. This was apparent from the presence of reddish-brown putrilage or a true purulent discharge with eroded spaces on the interior of the organ where the lining membrane was partly or entirely destroyed. The seat of the attachment of the placenta was always easily detected, and, as a rule, appeared to be healthy, in some cases even where there was disease of the vagina, cervix, and even portions of the endometrium of the body of the organ. The usual lacerations of the cervix could usually be detected, sometimes covered with diphtheritic membrane, at others free from it.

In most cases the endometritis was associated with infiltration and swelling of the uterus itself. As stated in the clinical history of the disease, swelling of this organ was often one of the earliest symptoms of the affection; so, after death, it was found large and flabby, with indentations on its upper anterior portion, produced by pressure of the intestines distended with gas. The peritoneum covering it was more or less inflamed. In a few cases almost all the evidences of peritonitis were limited to that portion of the membrane which covers the uterus and its appendages. Upon section, the walls of the organ were spongy, soft, and somewhat thicker than usual at the period of the confinement when death usually took place, but in no instance were there very manifest evidences of acute inflammation. The changes were rather those described by the Germans as infiltration and cloudy swelling. In two cases small, circumscribed abscesses, about the size of a pea, and with ragged walls, were noticed.

The infiltration and swelling of the connective tissue in the broad ligaments and other parts of the pelvis, led at times to inflammatory thrombosis and occlusion of the lymphatic vessels of the part. In some instances a few of these could be detected ramifying over the lower portion of the body of the uterus, but general obstruction of the lymphatics of that organ was more rare. It occurred in one of the patients the whole of whose vagina and endometrium were covered with diphtheritic mem-

brane. In that case the external surface of the uterus was covered with a beautiful reticulum of lymphatic vessels, some of them dilated almost to the size of a crow-quill. In some the dilatation was uniform; in others the vessel was studded with a series of varicose enlargements, which might be compared to a string of beads, and which varied in size from that of a millet-seed to that of a pea. Upon opening these a yellow, pus-like fluid ran out, and in the larger distensions a smooth lining membrane was discovered.

The uterine of one patient contained several small fibroid tumours. These had undergone inflammatory infiltration, and the outer surface of one of them was completely necrosed, and converted into a mass of pus, which had been confined by adhesions from the intestines. The appearances presented by the growth were such that it was concluded that the destruction had resulted from extension of inflammation from the peritoneum covering it rather than from any metritic inflammation.

The Fallopian tubes were usually intensely inflamed. Their mucous membrane was injected and covered with bloody mucus, while the peritoneum covering them was covered with lymph. Sometimes the peritoneal orifices were occluded by adhesions, and the catarrhal inflammation had progressed to the production of pus, which had distended the cavities of the organs.

The ovaries rarely escaped, and were usually covered with lymph; and in a number of instances, the acute inflammation having run on to suppuration, one or both of these organs were completely destroyed. In other cases, when but little lymph had been exuded, they were only swollen and injected.

Before proceeding to a brief description of the anatomical appearances of the other organs, it may not be amiss to dwell for a moment upon the peritoneal inflammation, since it occupies a prominent place in the description of the pathological alterations of most epidemics of puerperal fever. After the diphtheritic membrane on wounds, which is the essential and characteristic lesion of the disease described, inflammation of the pelvic connective tissue is the most constant anatomical change. A number of women perished during the epidemic without any considerable peritoneal inflammation, and, in a number, we were surprised to find this membrane healthy at the autopsy. If any patient perished without inflammation of the pelvic cellular tissue, no instance of it occurred in those under our care. In some cases the dose of the septic poison—if such an expression may be employed—was so great as to cause death before peritonitis had time to supervene. In these patients the blood seemed to be so altered as to be unable to longer nourish the tissues. Such cases were characterized by diphtheria of the injuries produced during labour, by the parametritis, by fluidity with dark colour of the blood, and rapid decomposition after death.

The changes in other organs are such as occur in diseases of this class, and are by no means peculiar to puerperal fever. The liver is most frequently affected. It is soft, flabby, and the cells are the seat of fatty changes. In one case in which the patient had suffered from general peritonitis, associated with jaundice, the liver was the seat of commencing inflammation and fatty degeneration. Microscopic examination showed that the organ was not uniformly affected by these changes, but that they only involved certain portions. These lesions were not always dependent upon inflammation of the peritoneum covering the organ, and extension of the disease from without inward. This was proved by the fact that they sometimes occurred when the serous membrane remained perfectly healthy, and by the fact that the lobules on the exterior were not alone affected, but the changes occurred in portions of the liver remote from the inflamed peritoneum. The cause for these changes must be sought for in the peculiar poison of the disease, which, finding its way into the circulation, acts either as a direct irritant or by impairing the nutritive properties of the blood:

The spleen was usually somewhat enlarged, and often softened until it formed a pulpy mass. Embolic patches were never noticed in either the spleen or liver.

The kidneys presented changes similar to those in the liver, the cells of the tubules being fatty and cloudy. In one case embolism of the kidney occurred, and terminated in death by uræmic intoxication six weeks after the delivery of the patient. At the autopsy the organ was studded with small abscesses, varying in size from that of a pea to that of a filbert.

The pleurisy peculiar to the disease has already been spoken of. The only other important lung change is pneumonia, which may be lobar or lobular, and which may be thrombic in its origin. The inflamed joints present no appearances which are peculiar to the puerperal woman. The shoulder, knee, wrist, or any of the other articulations may be affected. That between the sternum and clavicle was destroyed in one instance, and in another the pubic symphysis was affected, and the inclosed extremities of the bones bathed in a sac of pus. Dr. Playfair, in the last volume of the *Transactions of the Obstetrical Society of London*, relates a similar case, and says that another has been reported by Trousseau.

Nature of the Disease.—Various affections have been described under the general term puerperal fever. Clinical experience and some study of the literature of the subject appear to warrant the division of these into three classes:—

I. Local inflammatory diseases.

- a. Perimetritis;
- b. Parametritis;
- c. General peritonitis.

II. Septic diseases.

- a. Pyæmia and septicæmia ;
- b. Diphtheria of wounds ;
- c. Erysipelas of the genitals and internal organs in puerperal women.

III. Idiopathic fevers in the puerperal female.

Those of the first class appear to depend upon purely local causes. Perimetritis and parametritis may occur in the puerperal as well as in the non-puerperal female ; and we believe that most of those sporadic cases of pelvic pain and tenderness associated with fever, which are cured by one or two large doses of opium, are simple pelvic peritonitis, which has arisen independently of septic poison. We have likewise seen a number of women exceedingly ill with all the symptoms of general peritoneal inflammation of a sthenic type who were cured, as if by magic, when the practitioner used the lancet fearlessly. The quantity of blood removed in this disease should be limited only by the complete relief of pain, or the production of syncope. Such cases are by no means analogous to septic poisoning, but they may lead to it through suppuration if not treated quickly and promptly, the pelvic inflammation by opium, and the general peritonitis by blood-letting at first, and opium later.

The affection described in this paper has been placed in the second class, where it doubtless belongs. It is closely allied to pyæmia and erysipelas. Its connection with the former is shown by the occurrence of serious joint complications, the formation of thrombi, and the singular irregularities of temperature to which both are liable. The universal presence of diphtheria of wounds of the genitalia in this disease separates it from both pyæmia and septicæmia (which is probably but a variety of pyæmia), and seems to justify the conclusion that the *materies morbi* which produces the disease possesses some peculiar and specific properties. It is probably analogous or identical with what Billroth describes (*Surgical Pathology*, p. 308) as "diphtheria of wounds" or "hospital gangrene" in surgical patients.

The connection of this affection with erysipelas is demonstrated by the fact that after it had existed in the hospital for nearly a year, and had become endemic within its walls, there was a strong tendency to the production of erysipelas in the non-puerperal patients who were living in the same atmosphere. Fully recognizing the close connection between the two affections, there need be no hesitation in saying that this was not erysipelas in the lying-in woman.

We have not the space to say much in regard to the third class of diseases, which, as well as the first, have no connection with puerperal fever. Notwithstanding the apparently wide-spread opinion that the *materies morbi* of the essential or idiopathic fevers may be converted into that of

puerperal fever, we have never made any observations which support this opinion in the slightest degree. A not inconsiderable clinical experience has led to the belief that the essential fevers maintain their individuality in the newly-delivered woman, but that their course is modified by the puerperal process. Not only is this sometimes the case, but certain symptoms, the direct result of recent labour, may be superadded. These are pelvic pain and tenderness. During labour the tissues of the parturient passage become contused and bruised. If the woman meets with no mishap, these ordinarily recover without producing any disturbance; but, if she is depressed by an attack of scarlatina, typhus, or any other fever, the nutrition of these parts may be so interfered with as to lead to their inflammation, the symptoms of which may overshadow those of the original fever. The inflammation may go on to suppuration, and this in turn give rise to pyæmia. If the patient be seen in this stage of the disease, we acknowledge that the diagnosis may be very obscure; but this does not prove that the virus of the idiopathic fevers is convertible into the *materies morbi* of a particular disease—puerperal fever.

This term (puerperal fever), we think, should now be abandoned, and the various diseases which have been described under that head should be referred to their proper places. It has too long prevented the advance of knowledge by propagating the false impression that there is something essential and peculiar about the diseases of the lying-in woman. By comparing these with their analogues in non-puerperal, and especially surgical patients, they will be robbed of half their difficulties, and the physician, surgeon, and obstetrician can meet on common ground to discuss the mysteries of pyæmia, septicæmia, and erysipelas.

Treatment.—This may be considered under two heads, the prophylactic and curative. The importance of the former can hardly be overestimated if it be conceded that the disease is of local origin, and due to the introduction of septic matter into the blood. The means of preventing inoculation by the accoucheur are well understood, and, if he be careful to employ all the measures advocated for the purpose, he can hardly be the medium through which the disease is propagated, and he will not be obliged to abandon his obstetric practice when treating erysipelas, offensive wounds, or puerperal pyæmia, any more than the surgeon will have to cease operating when a case of one of these diseases occurs in his practice.

It is unnecessary to insist upon the necessity of removing patients from an atmosphere which is charged with septic matter, and if the importance which we attach to traumatism be admitted, it is equally unnecessary to insist upon using every possible means to prevent injury to the maternal tissues during delivery. The slightest rupture of the fourchette is important when there is a tendency to diphtheria of puerperal wounds.

In this connection it becomes important to consider the propriety of

making local applications to the wounded surfaces, with a view of preventing absorption. Will free cauterization of visible injuries with the hot iron, fuming nitric acid, or bromine, be of any avail in preventing the disease? We cannot throw any light upon the question from clinical experience.

During an outbreak of the disease vaginal examinations should be made as seldom as is consistent with the safety of the patient, and the placenta should always, if possible, be delivered by Credé's method.

The prolongation of labour has an important influence in producing the disease by exhausting the patient, and rendering her less able to resist the effects of the poison when absorbed. It is therefore of great practical importance to decide when the proper moment has come to hasten labour. It is a serious question whether the accoucheur is justified in resorting to the use of instruments earlier and more frequently than he would under other circumstances during the prevalence of an outbreak of metria. Remembering the fact that the longer the labour is delayed beyond a certain point, and the more the patient becomes exhausted, the more her powers of resisting this terrible disease are diminished, the accoucheur might conclude that he was justified in the early use of the forceps or vectis. Immediately after the appearance of the disease in the wards of the Philadelphia Hospital the writer frequently resorted to the use of instruments in cases in which more time would have been allowed had the wards been in good sanitary condition. Almost all these patients did badly. Some of the most malignant cases occurred among the mildest forceps deliveries—those in which the head was low down, and after rotation had taken place. Difficult forceps cases rarely escaped. The results of operative interference were therefore by no means encouraging. This fact is not explained by concluding that the instruments were not clean. New ones were used, yet the patients did no better than those who were delivered with the hospital instruments which had been in use for a number of years.

In relation to the administration of drugs to prevent the disease, there is but little to be said. Various medicines, including large doses of tincture of chloride of iron, and quinia, were given both before and immediately after labour, without the slightest reason to believe that they did any good. Quinia was proposed as a prophylactic of puerperal fever by M. Alphonse Leroy as early as 1793, and was extensively employed by M. Leudet in the Hôtel Dieu in 1843, 1844, and 1846—the latter says with great benefit; and Dr. Goodell, in his recent paper on the management of obstetric patients at the Preston Retreat, reasserts its usefulness. In the same article he, however, confesses that he has been fortunate enough to have little practical experience in this disease, and we cannot but fear that if the Retreat should unhappily be invaded by this pitiless affection he will find it unavailing.

The curative treatment may be considered under two heads, the general

and local. Immediately after the appearance of the initial symptoms the patients were given simple fever mixtures, composed of neutral mixture, or the solution of acetate of ammonia and sweet spirits of nitre, to which tincture of veratrum viride was added in a few instances, but not with benefit.

Quinia in various doses was administered; to some in divided doses of two or three grains every two or three hours, and to others from fifteen to twenty-five grains daily, in two doses, morning and evening. At first it was thought that it diminished the temperature, but subsequent experience seemed to indicate that it had but little effect upon the body heat. Large doses were sometimes followed by a temporary fall of temperature, but it was very hard to decide whether this was due or not to the remedy. The records of the temperature of a number of cases in which the quinia was given, and others in which it was not given, are so nearly alike that it appears to be unsafe to attribute to this remedy any power to reduce the body heat in this disease.

The sulphites and hyposulphites did not appear to be of any use whatever; while carbolic acid was worse than useless, producing disturbance of the stomach, obstinate diarrhœa, and disgust not only to the medicine but also for food, which is so necessary for the recovery of the patient.

Women with diarrhœa did badly. Schrœder speaks of purging as a plan of treatment, but the effects which succeeded and appeared to result from the diarrhœa in this epidemic entirely destroyed any hope that we might otherwise have had from it.

The main remedy, the one upon which we relied most, was opium. From the very onset of the disease its administration was commenced. The quantity given was limited only by the effect produced—the relief of the patient from all pain. In those who complained much, the resident-accoucheur was told to give opium until he had brought the respirations down to twelve, and to hold them there. This is perfectly safe, but in a majority of cases the respiratory movements will fall below this, usually to eight per minute, and sometimes to six, or even four. In the latter cases the remedy was obviously pushed too far, and uneasiness could not be avoided until the patient had rallied from the effects of the drug. One morning, on going to the hospital, three women who were under this treatment were found lying in beds side by side—one breathing eight, another six, and the third only four times per minute. Strange to say, not one of them was narcotized in the strict sense of the term. They were all stupid, dull, had contracted pupils, but could easily be aroused, when they answered all questions intelligently. It was often very surprising to notice how little the sensorium was affected by even heroic doses of opium. It always produced profound diaphoresis. The patients were bathed in perspiration. The pulse frequently fell twelve, fifteen, or even twenty beats under the use of the medicine, while the appearance of the

patient improved. The change produced by opium sometimes seems almost marvellous. A girl, who is alluded to above as having been so profoundly influenced as to breathe only four times per minute, was, before she was brought under the influence of the opium, writhing in indescribable agony. A grain of the sulphate of morphia, given in solution every two hours, did not materially improve her condition. The quantity was then increased to a grain and a half every two hours, with occasional hypodermic injections of a quarter and a half a grain of morphia. At the time that the additional quantity of the drug was given a consultation of the obstetrical staff was called to meet the next morning. When they came together, her condition was so altered that those who had not seen her could hardly believe that she had been so ill the evening before. There was an immediate improvement in her whole condition. For days the morphia was continued, and it seemed to act like a tonic, increasing her appetite and improving her strength.

The quantity of opium employed is to be limited only by the effect produced. Complete relief from pain is to be secured, no matter how much is required. The preparation used is of but little consequence if *it is soluble*. Solid opium might accumulate in the stomach, and as the patient improved be absorbed and produce fatal narcotism. In cases where the stomach is absorbing actively, the solid crude drug may be given. In other cases, the deodorized tincture, or a freshly prepared solution of morphia, may be employed.

If called upon to treat this disease and given but one drug, opium is the one which the writer would select. It sometimes produces in these patients as in others intense itching.

Venesection was not resorted to during the epidemic, and local depletion only a few times. The obvious tendency of the disease was to prostration, so that the strength was husbanded rather than wasted.

Purgatives were not employed unless specially indicated.

Good food was of course given and stimulants were administered as required. Patients to whom the latter were given rather sparingly did quite as well as those who consumed larger quantities.

The local treatment is of great importance. Turpentine stupes should be applied as soon as the patients begin to complain of pain. They may be followed by large warm poultices.

The most important part in the local treatment is the management of the diseased surfaces in the genital canal. These are very difficult to find if situated high up in the vagina or on the cervix uteri. If the tissues about the vulva and perineum are found healthy on inspection, it is a very serious question whether the physician is justified in introducing a speculum and exposing the upper portions of the vagina and the cervix. Air will thus be admitted to the interior of the uterus, and there is so much danger of infection under these circumstances, that it appears rational

to conclude, that, unless there is moral certainty that there are diphtheritic deposits on these parts, they should not be exposed.

More importance may be attached to this opinion, when it is remembered that the value of caustic applications to the diseased tissues is not yet determined. When wounds on the genitalia of puerperal women have become diphtheritic, the poison has already entered the system, and its effects can be seen in the slight pelvic tenderness, the swollen uterus, and the pale, ashy countenance, which tell in unmistakable language that the system has been influenced by some profound poison, though it has not had time to react, as is shown by the slow pulse and cool skin. After these effects have been produced it is exceedingly questionable whether the application of caustics to the wounded surface is of any use. Their application before this period—immediately after delivery—it may be hoped would aid in preventing the disease. However, in the present state of our knowledge, the writer would be inclined to employ caustics during the progress of the disease. They were used in some cases during the epidemic. The wounds in which they were employed probably healed more rapidly than those which were treated with simple dressings, but it was by no means proved that these applications were either necessary or useful. Any of the ordinary escharotics may be employed if they are deemed necessary. Strong carbolic acid or fuming nitric acid are probably the best. It is not improbable that bromine might be found to act in this disease as it does in hospital gangrene. We have not used it.

Another mode of local treatment is by means of injections. The offensive character of the lochia seems to be a positive indication for their employment, yet at the bedside we did not derive the benefit anticipated from their use. It is doubtless highly important to remove any matter from the vagina, the absorption of which is deleterious, but, attaching all due importance to this statement, it must be remembered that this remedy is addressed to an effect, not to the cause of this disease. It is to be remembered, too, that but few cases are autogenetic in their origin, and that after the poison is once introduced into the system, it is not only reproduced in the vagina, but in all the inflamed lining tissue of the pelvic and abdominal cavities.

If the disease commence in a wound of the fourchette, perineum, the lower part of the posterior wall of the vagina, or the labia minora, the propriety of using vaginal injections at all is very questionable. In all cases, and especially in primiparæ, it is more than probable that there are wounded surfaces higher up in the vagina and on the cervix uteri. The passage of a speculum over a diseased surface, at the outlet of the genital canal, would be very likely to inoculate these points if they had previously escaped. The tube of the syringe, in passing up to wash out the vagina, is liable to effect the same thing. If it does not itself come in contact with an abraded surface, and thus directly inoculate it, it can

hardly be hoped that poisonous matter will fail to accumulate about the orifice of the tube, and that it will be carried up by the solution injected, and be thus brought in contact with the wounded surfaces.

Reasoning and clinical experience, therefore, led us to employ vaginal injections somewhat charily during the epidemic, but not to condemn them absolutely. An exceedingly offensive and copious vaginal discharge indicates their use, and, in the latter stages of the disease, when an abscess has ruptured into the vagina, they should always be employed.

Whatever may be the truth in regard to vaginal, we have no doubt about the impropriety of using intra-uterine injections. These were tried in a number of cases, and with very few exceptions did harm; they produced pain, and their use was sometimes followed by an increase of fever, much abdominal uneasiness, and a more rapid pulse.

Though these measures are not resorted to, the medical attendant and nurses are by no means without resources. These wounds of the genitalia, at least those which are in sight, need careful treatment. They heal slowly enough, whatever may be done. They are to be managed upon general principles, and should be carefully dressed with some stimulating lotion several times a day. Cleanliness is of the highest importance. Every patient should have her own basin, towel, and sponges, if they are used, but it is undoubtedly better to abandon the latter, and to use something that can be thrown away after being soiled.

These remarks apply to the early stage of the disease. During the latter stage, after the patient has begun to sit up, there is still much to be done. The pelvis is now partly or entirely filled by an inflammatory mass, which may even extend beyond this into the peritoneal cavity.

Besides the remote effects, due to fixation and displacement of the uterus, there is immediate danger of a renewal of inflammation and suppuration, just as in cases of non-puerperal perimetritis or parametritis. The patients at this time are to be managed as if they had these diseases in the non-puerperal state.

1513 ARCH ST., PHILADELPHIA.

ART. III.—*Case of Pneumo-Hydropericarditis; with Remarks.* By J. FORSYTH MEIGS, M.D., one of the Physicians to the Pennsylvania Hospital, etc. etc.

THE following extraordinary and rare case occurred in my private practice, in February and March, 1874. The history is drawn up partly from rough notes taken at the time and partly from memory. I regret that the notes were not more full and particular, but, nevertheless, such a

case ought to be put upon record, and the reader may rely upon the correctness of the record as far as it goes.

The patient was a young man 18 years of age; one of five children, all living and in good health, parents both living and in good health. The father had, between thirty and forty years ago, three violent attacks of acute rheumatic fever, but has had good health since. It ought to be stated, moreover, that one of the sons has had acute rheumatism. This fact is particularly referred to, because it may have had something to do with the causation of the case. Three distant relations have had cancer.

One year before the present illness, in January and February, 1873, the patient had a troublesome cough, attended with hectic fever, severe night sweats, and loss of strength and flesh. These symptoms were due to a chronic catarrhal pneumonia of the anterior portion of the upper lobe of the left lung, marked by fine and coarse râles, harsh respiration, and moderate dulness on percussion. At the time much anxiety was felt as to the possible termination of the case in tubercular disease, but the symptoms subsided gradually, and from March of that year he seemed to be in his usual health.

On the 4th of February, 1874 (being then, to all appearances, in full health), he was exposed to cold after having got his feet wet, in an office in which the fire had died out. Cough set in, with loss of strength and flesh early in the case, and with feverishness at night. He was not, however, confined to his bed.

I saw him first on the 10th of February. He looked badly; had a thick, pallid complexion, and seemed weak and sick. The pulse was frequent; the skin hot; and the breathing short and oppressed, especially upon exertion. He complained of obscure pain in the chest, especially on the right side. There was a frequent, loose sounding, and troublesome cough, but no expectoration. The appetite was poor, and there was a tendency to constipation.

On examining the chest it was evident that he had plenrisy at the base of the right lung. Breath sounds feeble and sniffling over the inferior posterior region of that side; marked dulness on percussion over this side. And, as the area of dulness shifted with a change of position, though but very moderately, it was clear that there was some effusion into the plueral sac. Elsewhere over the chest the percussion sound normal. Extensive coarse sonorous râles all over the thorax.

He was advised to keep quiet within doors, to take for diet, milk, bread, eggs, light meats, and food of that kind. He was ordered a febrifuge consisting of citrate of potash, with some opium and digitalis every four or six hours; quinia, eight grains, in two doses in the morning; the bowels to be moved by a mild laxative pill, or, if that fail, by an enema.

The condition continued without material change until the 15th, when he went out for a walk, but soon returned. Advised him to go to bed, which he accordingly did, though rather unwillingly; treatment continued.

February 21. Condition not materially changed, but no improvement. Physical signs much the same; coarse and rough, and mostly dry râles, heard all over the chest; cough troublesome from its frequency, with scarcely any expectoration; once or twice a day a little yellowish-white phlegm; losing flesh and strength.

There was something even now in the case, which the pleurisy seemed scarcely to explain, and it became a question whether he was not becom-

ing tubercular, or whether he had typhoid fever in which the local inflammation was intercurrent. The presence of tympanitic abdomen, and of an irregular eruption upon the abdomen, appeared in some degree to favour the latter opinion. But, the marked constipation which prevailed, the moist tongue, the clear, quick mind, and the unsteady character of the fever, forced me to reject this theory, except as a possibility, and led rather to the fear that lung disease of a most dangerous kind was the key to the symptoms.

The treatment, quinia in the morning, the febrifuge every four to six hours, entire rest in bed, was continued. Milk, milk toast, arrowroot, beef-tea, jelly, light meals—such food of this kind as he would take was given regularly. Wine whey also in wineglassful doses was given several times a day.

24th. At 1 P. M., pulse 110; temperature $102\frac{1}{2}^{\circ}$.

25th. 8 A. M., pulse 110; temperature 102° . Had one free stool in the morning. Urine free; non-albuminous. Cough spasmodic and troublesome, loose in sound, with scarcely any expectoration. At 4.30 P. M., pulse 110; temperature $102\frac{1}{2}^{\circ}$. Some dulness on percussion at base of left lung behind, with deficient expansion—at same point breath-sounds feeble; making it plain that the disease had extended to the left side. It was evident now that the disease was not typhoid fever, but one of those cases of inflammation of the serous membranes of both sides of the thorax, which are so rare as idiopathic conditions. There was no sign of renal disease, and in the absence of such cause, it was thought most probable that the double pleurisy was related to a tuberculous constitution, or to the presence of cheesy degenerations in the lung following the chronic pneumonia which had existed in January, 1873.

26th. At 2 A. M., temperature 99° . At 9 A. M., had had two costive stools, free in amount. At 6.55 P. M., pulse 102; temperature 104° . At 8 P. M., seized suddenly with most violent pain, stitch-like, at the base of the chest in front, causing great agony when he attempted a full inspiration, attended with racking and suffocating cough, and constant rough râles. Concluding that it was diaphragmatic pleurisy, sinapisms were applied, and brandy half an ounce, with paregoric half an ounce, was given. At 10.15 P. M., the pain continuing, the brandy and paregoric were repeated; at this time the pulse counted 120.

27th. 4.15 A. M., pulse 120; sweating freely. 7.15 A. M., pulse 112; temperature $101\frac{1}{2}^{\circ}$. Condition of right lung unchanged. The dulness over inferior posterior part of left chest, with distant and deficient breath-sounds, very marked. Coarse, loud râles audible over the whole chest. Heart sounds natural. Continue quinia, six to eight grains daily; ordered an eighth of a grain of morphia, every three or four hours, as might be necessary to allay the pain and cough.

28th. 7.30 A. M., temperature $102\frac{1}{2}^{\circ}$; much thirst; some sweating; cough spasmodic and troublesome; complains of pain in left side of chest, and in region of heart. At 5 P. M., pulse 124; temperature $103\frac{1}{2}^{\circ}$. At 9 P. M., pulse 112; free perspiration. Has taken to-day brandy half an ounce, several times, and morphia, an eighth of a grain, four times; appetite poor. To have what food he can take. Ordered eight grains of blue pill, as the bowels are costive, and it has been used before successfully for an habitual constipation which was constitutional.

March 1. At 2 A. M., pulse 116; temperature 102° ; slight perspiration. At 7.45 A. M., pulse 116; temperature $101\frac{1}{2}^{\circ}$. At 12 M., pulse 116,

and markedly intermittent; temperature $100\frac{1}{2}^{\circ}$. Examination of the chest shows no material change in the lung condition. The intermittent state of the pulse drew attention to the heart, and there was found a rough friction-murmur, over the body of the heart, quite loud and superficial. He is losing strength and flesh rapidly. Tongue moist, moderately furred. Mind quite clear. Takes arrowroot in milk, yolks of eggs, and some coffee. Continues the quinia, brandy, half an ounce, every three or four hours, and to have a pill as follows: R. Ext. opii, gr. iij; pulv. digitalis, gr. xij; quinia sulphat. gr. xxiv. Ft. in pilul. no. xxiv. One every four hours. He is still to take the morphia from time to time, as the cough may make it necessary. Had an enema which brought away a costive stool. A blister 4 x 6 applied for three hours over the anterior upper part of the chest.

2d. Early in the morning had a free, feculent stool, with much flatus. At 8 A. M., pulse 112; temperature $98\frac{1}{2}^{\circ}$. Has been sweating freely. Is much oppressed. Takes food only by persuasion, and then not much. At 8 P. M., pulse 130; sweating. At midnight skin hot and dry. Has had three stools to-day, loose in character. Quinia, febrifuge pill, and occasional doses of morphia to be continued.

Throughout the case there has been very little expectoration. Noted to-day that he had expectorated four times in the twenty-four hours; twice the sputa were large and twice small, consisting of thick and viscid yellowish-white phlegm, not rusty.

3d. 2 A. M., skin hot and yet moist, especially about the back of the head; drinks freely of cold water. 5 A. M., profuse sweat; pulse 134; expectoration more free; has taken some chicken soup. 8 A. M., pulse 128, full and soft; temperature $100\frac{1}{2}^{\circ}$; respiration 36 to 40. 10 A. M., pulse 130; temperature 101° . At 1.20 P. M., pulse 132; respiration 40. At 7.30 P. M., pulse 138; temperature $102\frac{1}{2}^{\circ}$; respiration 40. To take quinia 4 grs., morphia $\frac{1}{8}$ gr. as before; brandy and what food he can be made to take. Friction murmur at heart very distinct, heard over large space. Area of cardiac percussion dulness increased.

4th. 9.30 A. M., pulse 130; respiration 40. To have 12 grs. quinia to-day; morphia every four to six hours. Ordered tinct. digitalis, 10 drops, to be taken four times a day. 6 P. M., pulse 138; temperature $101\frac{1}{2}^{\circ}$; respiration 36. Is sweating a great deal. Chest râles not so distinct. Has taken to-day a little of the meat of a bird, some chicken-jelly, and some ice cream. At 10 P. M., pulse 128; temperature $101\frac{1}{2}^{\circ}$; respiration 38.

5th. 1 A. M., pulse 130; respiration 32; sweating freely; drinks water abundantly. Urine free and light-coloured. 7 A. M. pulse 128; respiration 40; temperature 102° . Had a large and spontaneous feculent stool, and a little later a smaller one.

At the morning visit, one of the family called my attention to a very peculiar sound in the patient's chest, which was audible to a person sitting by the bedside (three or four feet off). It was noticed first late in the night, had a splashing character, and suggested to myself the sounds produced in an old-fashioned upright churn, which, being worked by the arms, had a certain regular rhythm. Listening over the heart, both the sounds and the friction murmur were accompanied by the most extraordinary metallic reverberation I had ever heard, and were followed by the loud splashing or churning sounds which had been heard at the bedside. The echo-like reverberation was so like the amphoric note heard in pneumo-

thorax, and the churning sound so like the succussions of the same disease, that the presence of air and liquid in the pericardium was at once suggested to my mind. The metallic tone of the sounds resembled the note sometimes heard when the stomach is distended to an unusual degree, and yet it was so clearly amphoric that I could not resist the impression that there must be air in the pericardium. The percussion sound over the cardiac region, and for some distance below it, was tympanitic, so as to suggest the possibility of pneumothorax, but its limitation to the middle portion of the chest, and the presence of respiratory murmur below, rendered this explanation very improbable.

Two theories, besides that of gas in the pericardium, suggested themselves. One was that the stomach was largely distended with air, and that this gave to the heart-sounds their metallic tone. But percussion over the epigastric and left hypochondriac regions showed that the stomach did not contain more air than usual, and, moreover, this would not account for the loud splashing or churning sounds. The other was the presence of a large suppurating cavity in the lung, but this was soon dismissed, because neither auscultation, percussion, nor the rational symptoms made it possible. There had been at no time, and there was now, scarcely any expectoration.

At 1 P. M., pulse 138; respiration 40; temperature $102\frac{1}{2}^{\circ}$. At 10 P. M., sleeping, with a moist skin and full pulse. The brandy, quinia, digitalis, and occasional doses of morphia were continued. What food he could take was given.

6th. At 12.30 A. M., pulse 132; respiration 40; skin hot and slightly moist. At 6 A. M., pulse 133; respiration 36; skin very dry and harsh; drinking very freely of water. At 8 A. M., pulse 128; respiration 36; temperature 102° . Tranquil and easy. Had a free and healthy feculent stool. Heart-sounds continue to have the singular amphoric tone of yesterday, and, added to this, they are attended with and followed by a sound so like metallic tinkling that I know of no other phrase by which to express to the reader what I heard. In addition to this there was, with each contraction of the heart, a loud splashing sound like that of succussion as heard in hydro-pneumothorax. This last sound was so distinct, so peculiar, so precisely synchronous with the heart's action, that there was no doubt about its dependence upon the cardiac movement. Preceding the tinkle and splash was heard coarse friction-crepitus; this was most distinct at base. Palpation over præcordia gave a curious splash-like sensation with each stroke of the heart. Ordered a blister 4 x 5, to be applied over the heart for two hours; quinia, 8 grs. in two doses; tinct. of digitalis as before, and occasional doses of morphia to allay the cough and distress. Liquid food as it could be taken, especially milk punch and beef-tea. At 2 P. M., pulse 132; respiration 36. Blister to be poulticed. At 6.15 P. M., pulse 138; respiration 36-38. At 7.30 P. M., temperature $103\frac{1}{2}^{\circ}$. Has taken some arrowroot, and some cream, egg, and brandy, beaten together.

There could now be little doubt that the patient had air as well as fluid in the pericardial sac. The origin of this abnormal condition it was possible only to theorize about. After looking over the various authorities, it seemed to me most probable that a small cheesy abscess in the upper portion of the left lung (where the patient had had the slow, suspicious inflammation a year before his present illness) had opened into the pericardium, and thus permitted air to enter that sac.

7th. At 7.30 A. M., pulse 132; respiration 32-36; temperature 100°. Became wildly delirious to-day, so that it was necessary to resist his attempts to leave the bed. Vomited freely several times in the day. Lime-water with milk and brandy given. To control the delirium and excessive agitation, chlorodyne and bromide of potassium were both tried, and both vomited. Then $\frac{1}{8}$ th of a grain, and afterwards $\frac{1}{4}$ th of a grain of morphia were used hypodermically, and the patient became more quiet. He sank gradually, and died at 3 A. M. of March 8th.

During the last day of life such examination of the chest as could be made showed no material change in the physical signs. The amphoric note and metallic tinkling-like sound, and the loud splashing sounds within the pericardium, were as distinct as before.

9th. *Post-mortem Examination.*—Assisted by Prof. Ellerslie Wallace and by Dr. Jordan. Body a good deal emaciated. On removing the sternum the pericardium was seen to be very much distended, both longitudinally and transversely—so much so that its anterior surface bulged up between the ends of the costal cartilages as soon as the sternum had been lifted away. To the touch it was very elastic, more so than I had ever felt it before. Assuming the case to be one of pneumo-pericardium, it was determined to open the sac in such a way as to leave no doubt of the presence of air, if air were really present. With this view I had brought with me a small aspirator syringe, supplied with a piece of gum-elastic tubing several inches long, arranged for connecting at one end to the syringe, and at the other to a fine exploratory needle. Fitting the tube to the needle, and arranging the free end of the tube under the surface of water in a basin, held by Dr. Wallace, I plunged the needle carefully and very obliquely into the pericardial sac. Instantly air began to escape freely in large bubbles through the water. Of course, the first small portion of air escaping was that which had been already in the tubing. But it was evident from the large size of the bubbles and the rapidity with which they formed, that air or gas was coming from the pericardium. Moreover, the smallest pressure, applied and removed by turns, upon the sac, evidently increased and diminished the quantity escaping. In addition to this, the walls of the cavity collapsed as the gas escaped, and fell below the level of the sternal opening. Dr. Wallace suggested that we should try whether the gas might be inflammable. Putting a finger over the end of the tube, to arrest the escape of gas, which was very easily done, we lighted a match, and threw, by pressure on the sac, a jet of gas on the flame. It did not ignite. We observed, too, that it had no distinct odour.

The gaseous contents of the pericardium having been pressed out, we made an incision into the anterior wall to examine further the state of the cavity. It was found to be greatly enlarged. The heart lay upwards and backwards, and there was a large open space between it and the inferior wall of the sac (which had contained the air), sufficient to hold, probably, a quart or more of water. In the inferior posterior portion, below the heart, was lying a half or three-quarters of a pint of thick, very dark, reddish-brown liquid, consisting apparently of serum and altered blood. There were also to be seen a few, small, soft coagula, showing that there had been a true hemorrhagic effusion into the cavity. The investing membrane of both heart and pericardium was greatly thickened, rough, villous, of a dark reddish-brown, verging on purple tints, and, at the same time, softened and deeply stained with the effused blood. The cardiac surfaces

were especially thick, rugous, brownish in colour, and looked utterly unlike the natural surfaces.

The fluid in the pericardium having been taken out with sponges, it became important to learn by what route the air had entered the pericardium. It was proposed to inflate the lungs as they lay in the chest, to ascertain whether there might have been a pneumonic abscess, which had ruptured into the sac.

Accordingly, taking a large male catheter, Dr. Wallace inserted its lower end through one of the nasal fossæ into the trachea, when, on blowing forcibly, both lungs expanded, and soon filled up the cavity of the thorax completely, so as to project through the sternal space. So complete was the expansion of the lungs, that it seemed impossible there could be any break whatever in their tissues. Continuing the inflation, we thought air began to issue from the open pericardium. To test this point, water was poured into the cavity, until it was full, through the moderate incision that had been made in its anterior surface. Dr. Wallace now again inflated, and air was seen to bubble freely through the water in the pericardial sac, proving some communication through the trachea, bronchi, œsophagus, or lung, with the pericardium. I must mention, also, to make clear what followed, that during the efforts at inflation, the stomach at one time became distended with air as well as the lungs, showing that the lower end of the catheter was sometimes in the pharynx or œsophagus.

We could not as yet, however, make out by what passage air had entered the pericardium. It was evident that air had passed in during life through the upper passages, bronchi, lungs, or œsophagus, but which? It had not formed spontaneously in the sac.

To determine this difficult point, we took out of the thorax the whole of its contents, cutting away carefully from the back of the chest, trachea, œsophagus, lungs, and heart. On placing the removed organs in a basin of water, we inflated the lungs again through the trachea, and could perceive no air emerging through the pericardium. Knowing that a few cases had been put on record, in which the pneumo-pericardium was the result of perforation of the œsophagus, Dr. Wallace very carefully slit open with scissors the œsophagus along its posterior wall, and examining carefully, discovered a small and superficial depression in the anterior wall of the tube just below, perhaps a quarter of an inch, the bifurcation of the trachea. The depression was half an inch in diameter, and in its centre was a small perforation with ragged, dark, ulcerated edges, large enough to receive the point of the catheter. This perforation led through some connective tissue directly into the very upper extremity of the pericardium. The opening was not large enough to receive the point of the little finger.

The trachea and both primary bronchi, at the bifurcation, were slit open and carefully examined, but no opening of any kind between them and the pericardium could be found.

Before removing the contents of the thorax, the condition of the pleural cavities had been examined. There was severe pleurisy, limited, however, chiefly to the inferior portions of both sides. Serous fluid with many flocculi was found in both sides, and both costal and pneumonic pleuræ were highly vascular, and exhibited recent plastic deposits, and soft, loose adhesions. In the right pleura there was about a pint of fluid, and less in the left. The pleura covering the diaphragm was also inflamed, and showed recent deposits of soft exudation material, thus explaining the in-

tense pain and distress in the region of the diaphragm, and suffocating stitch and cough, which the patient suffered on the 26th of February.

The lung-tissue was healthy, except for some points of congestion, and here and there a few scattered points of cheesy deposit. The bronchial mucous membrane showed severe catarrhal inflammation—deep redness, thickening, and abundant, thick, dark-coloured, almost puruloid fluid, though there had been so little expectoration during life. No tuberculous formation of any kind was to be found.

The muscular tissue of the heart was softened in all directions, and exhibited the appearances of myo-carditis. The endocardium was stained dark, but showed no inflammatory conditions. The valves were healthy.

The abdominal organs were nearly healthy. The liver, however, was somewhat enlarged, and more fatty than natural. There was no disease of the kidneys.

Remarks.—Pneumo-pericardium, pneumo-hydro-pericardium, pneumo-pyo-pericardium, or pneumo-hydro-pericarditis, as it is called technically, is a very rare form of disease. Doubtless few medical men meet with it, and many live and die, as I should have done, but for the accident of meeting with this case, almost without knowing that such a form of disease is treated of in the formal text-books.

I cannot find that a case has ever been recognized in this city. None of my friends, to whom I have spoken, seem to have met with it. For the information of those who have not had their attention drawn to this morbid condition, and for the better elucidation of the case above described, I will cite some of the authorities who have written upon the subject, and refer to some of the cases which have been put on record.

So rare is it that Rokitsansky (*Pathological Anatomy*, Sydenham Soc. Ed., vol. iv. p. 141) says: "We have never met with an accumulation of air in the pericardium—pneumatosis pericardii. Most of the cases recorded, like the pneumatoses of other serous sacs, leave room for many doubts regarding their existence during life." I do not find a case reported in any of the *Year Books* of the Sydenham Society, from 1860 to 1872 inclusive, nor in the *American Journal of Medical Sciences*, from 1843 to 1873. In the *Lancet*, from 1860 to 1871, with one exception, I find no case of pneumo-pericardium referred to. The exception will be found in vol. ii. 1860, p. 263. It is a case which, if correctly reported, would seem to show that air may be generated in a healthy pericardium. It occurred in St. George's Hospital, London, under the care of Mr. Cæsar Hawkins.

The patient, a woman aged thirty-five, was admitted March 31st, one month after having been vaccinated. When the pustule had scabbed over she gave it a violent blow, which was followed by inflammation of the arm. Abscesses followed in the arm and neighbourhood, then pyæmia, with patellar abscess and erysipelas, and she died twenty-three days afterwards. At the autopsy "the pericardium contained a large quantity of air; in other respects it was natural. Heart, lungs, and other viscera healthy." It is stated, in the previous notes of the case, that six days before death "there were several gangrenous patches situated over the prominent parts of the ribs and right side, and also over the right nates."

This case is so extraordinary that one cannot but regret that fuller details are not given as to the mode in which the presence of air was determined at the autopsy.

Trousseau (Sydenham Society's edition, vol. iii. pp. 369-390) gives two cases of paracentesis of the pericardium. In the second case, Aran tapped the pericardium a second time, twelve days after the first operation, and threw into the sac a solution of tincture of iodine and iodide of potassium in water. During this portion of the operation air penetrated, and he was able to "detect the curious sign of hydro-pericarditis, for the description of which we are indebted to Dr. Bricheteau, viz., "an excessive gurgling—a sort of churning sound (*clapotement*) like that produced by a pump jumbling air and water in the same cavity. After the operation the præcordial lesion was the seat of well-marked tympanitic resonance." The gurgling and tympanitic resonance disappeared some time after the operation.

Canstatt (*Handbuch der Medicinischen Klinik*, vol. iv p. 114) recognizes the existence of the disease in a few words, but gives no case. He doubts the spontaneous formation of air in the sac, and states that it enters the pericardium through a penetrating wound from the lung or from the intestine.

Stokes (*Diseases of Heart and Aorta*, Dublin, p. 21) relates a case which occurred to himself, in which a young man had the usual symptoms of dry pericarditis, with a considerable effusion of lymph of the ordinary consistence. After a few days the heart-sounds and murmurs became suddenly so loud that the patient and his wife, who occupied the same apartment, were unable to obtain a moment's repose. On examination, he says:—

"A series of sounds was observable, which I had never before met with. It is difficult or impossible to convey in words any idea of the extraordinary phenomena then presented. They were not the rasping sounds of indurated lymph, or the leather creak of Collin, nor those proceeding from pericarditis with valvular murmur, but a mixture of the various attrition murmurs, with a large crepitating and a gurgling sound, while to all these phenomena was added a distinct metallic character. In the whole of my experience I never met so extraordinary a combination of sounds. The stomach was not distended by air, and the lung and pleura were unaffected, but the region of the heart gave a tympanitic *bruit de pot fêlé* on percussion; and I could form no conclusion but that the pericardium contained air in addition to an effusion of serum and coagulable lymph. In the course of about three days the signs of effusion of air disappeared, leaving the phenomena as they were at the first period of the case. The convalescence of this patient was slow, and the rubbing sounds continued for an unusual length of time. His recovery was ultimately perfect."

At page 25 Dr. Stokes quotes a case reported by Dr. B. McDowel, in the Pathological Society of Dublin, in which, during life,

"The physical signs gave evidence of a large cavity, containing air and fluid, in the antero-inferior region of the left side of the chest: here was heard metallic tinkling, *bourdonnement amphorique*, and splashing of fluid caused by the action of the heart; these sounds were produced by making the patient breathe

deeply, and with them could be heard faintly the normal cardiac sounds, but no respiratory murmur. Percussion yielded a perfectly clear sound over these regions."

The patient lived six days after the violent symptoms had intervened, the above symptoms and signs continuing during this time. At the autopsy, it was found that a small fistula existed in the right wall of the sac, which led into a small anfractuous cavity, near the second fissure, in the upper lobe of the right lung. When the pericardium was cut into it contained air, and about six ounces of whitish pus. The lower lobes of both lungs were solidified by a deposit of miliary tubercle and pneumonia.

Dr. Graves (*Clinical Lectures*, Dublin, 1864, p. 617) gives a case in which pneumo-pericardium was caused by the rupture of an abscess of the left lobe of the liver, through the diaphragm at the point where the pericardium is attached to it. Other openings from the abscess into the stomach had taken place, through which air had passed from the stomach into the cavity of the abscess, and thence into the pericardium. In this case "a loud metallic ticking, audible to each stroke of the heart," was heard; and it was noticed, after death, that "percussion over the front of the chest afforded no evident dulness; over the cardiac region it was clear." Graves calls attention "especially to the physical phenomena produced by the simultaneous presence of air and fluid in the pericardial sac; no instance having been hitherto recorded where similar symptoms, arising from ulceration, extended to that sac, have been observed."

In Von Stoffella's edition of Oppolzer (*Lectures on Special Pathology and Therapeutics*, Erlangen, 1866, p. 291) reference is made to pneumo-pericardium, and to a case seen by Oppolzer in Pitha's clinic in Prague. It is stated that the sound heard over the heart was like that produced by the falling of small shot into a gun. It is also stated that the percussion sound over the heart was tympanitic when the patient was lying down, and that when placed in the sitting position the resonance was limited to the base of the heart, whilst the remaining portion of the cardiac region gave an empty, dull, low, tympanitic sound, showing that air and liquid were inclosed in a closed sac.

Skoda (*Auscultation and Percussion*, translated by Markham, London, 1853, p. 335) says: "I have never seen a case of pneumo-pericardium;" and then goes on to speak of what would probably be the physical signs, and in a foot-note refers to Bricheteau's case.

M. Bricheteau's case, which is often referred to, occurred in 1835 (*Arch. Gén. de Méd.*, 4e série, tome iv. p. 334), in a man of 50 years of age, who entered the Necker Hospital March 27th, 1835, and died April 3d, following. From March 27th to April 1st, it was supposed that he had some inflammation of the lungs; but on the 1st of April he was so much distressed that M. Bricheteau examined the heart, and heard a sound attending each movement of the heart, which he and several assist-

ants thought must be due to a fluctuation or wave of liquid corresponding to each cardiac contraction, and which he compares to the noise made by the floats of a mill-wheel as they strike the water, or to that caused by blowing strongly through a tube into a vessel containing water. "The cardiac region gave no dulness on percussio; on the contrary, it was more sonorous than natural." At the autopsy, the pericardium was found enlarged, tense, with a clear sound on percussio; and, when opened, gas of a very fetid odour escaped with a whistling sound. About eight ounces of yellowish, purulent fluid, fetid, and containing albuminous flocculi, were found in the sac. M. Bicheteau supposed that the pneumatosis was the result of decomposition of a portion of the serous fluid, which had been secreted by the inflamed membranes. He also says: "This affection is certainly a very rare one; multiplied researches have not enabled me to discover a single instance of the kind which had been clearly detected during life, and proved by examination after death." The peculiar fluctuation he describes, and which he compares to the splash of a mill-wheel in water, he believes to be the true and reliable sign of the presence of air and fluid in the pericardium.

In regard to this case, I shall have to say hereafter, that the examination was not conducted with the care necessary to demonstrate that there was no perforation of the pericardium; and, therefore, the assumption, that the air in the sac must have been the result of a decomposition of some of the fluids present, is not at all proved. In my own case, only the great care taken by Dr. Wallace and myself enabled us to discover the small perforation at the very roof of the pericardium. But for our conviction that air must have penetrated from without, when we could find no opening in the lungs, trachea, or bronchi, the œsophagus might not have been opened, and another false fact would have been added to the long list which weighs on the medical art, forcing us to assume that decomposition in a shut serous sac must have been the mode of evolution of the gas.

Walshe (*Dis. of the Heart*, Philad. ed. 1862, p. 215) describes the signs and symptoms of the disease, and refers to a case he had seen of traumatic communication between the œsophagus and pericardium.

Flint (*Dis. of the Heart*, Philad. 1859, p. 357) describes pneumo-pericardium, and refers to the cases seen by Graves, Stokes, O'Donnel, and Walshe, and to a case related to him by Dr. Knapp, of Louisville. In this last case the patient had been stabbed with a knife, which penetrated the pleural cavity, and perforated slightly the pericardium.

"A splashing sound with the heart's action was immediately heard, which continued for a few days and disappeared. The symptoms and signs, subsequently, did not denote pericarditis, but the patient had pleurisy which was followed by considerable contraction of the left side. The splashing sound was fairly attributable to the presence of air and probably a little blood within the pericardium. The recovery was complete, and the patient was examined by

me some two or three years after the injury. In such a case the affection, assuming that inflammation was not present, is properly called pneumo-pericardium."

Niemeyer (*Prac. of Medicine*, translated by Drs. Humphrey and Hackley, New York, 1869, vol. i. p. 393) met with a case which was reported by his assistant, Dr. Tütel, in which it arose from a perforation of the pericardium by a cancer of the œsophagus. He states, in regard to the symptoms, that :—

"Even at some distance from the patient a peculiar, clear, splashing sound can be heard, which comes and goes with short, rhythmical, intervening pauses, and which, beyond all question, is caused by the agitation in the liquid contents of the pericardium by the movements of the heart. In my case this splashing sound was distinctly audible to the room-mates of the patient, who lay at the other end of the ward." On percussion "there is no cardiac dulness, and indeed, the percussion sound about the region of the heart is extremely full, clear, and tympanitic, often having a distinct metallic ring. Upon making the patient sit up, or upon making him bend forward, the beat of the heart became somewhat more perceptible, and as the air now rises and the liquid presses forward, the former clear sound is replaced by a dull one. Upon auscultation, either nothing can be heard excepting the above-named metallic splashing, or else we may hear feebler heart sounds and friction sounds."

Dr. T. M. Fothergill (*The Heart and its Diseases*, Philadelphia, 1872, p. 249) says that pneumo-pericardium and pyo-pericardium are usually found combined, though one may precede the other.

"The combined condition may arise in either from the suppuration within the pericardium making its way outwards, or from an abscess opening into the pericardium, and gas being evolved from chemical changes in the pus. The evidence of this accident occurring, and of air in the pericardium, is the clear note, indeed tympanitic on percussion. The tinkling on percussion is also heard. On these two witnesses, in addition to what has gone on before, and the collapse accompanying it, the diagnosis is based."

Dr. Fothergill does not seem to have seen a case himself. He is the only author I have yet found who suggested the idea which I formed in regard to my own case, that the perforation by which air had been admitted into the pericardium, was probably the result of an effort on the part of nature to evacuate the contents of the sac.

Dr. Thomas K. Chambers (*Lond. Journ. of Med.*, July, 1852, p. 606) gives a case in which a non-malignant and extensive ulceration of the œsophagus had opened into the pericardium. At the autopsy the pericardium was found distended with air. This condition had not been discovered before death. The heart had been cursorily examined two days before death, and "no remarks made about it."

M. S. N. Demarquay (*Essai de Pneumatologie Médicale*, Paris, 1866) refers to a case, not apparently detected during life, reported in the *Medical Times and Gazette* for 1857, and to another case reported by a Dr. Johnson (*Med.-Chir. Review*, vol. vi. p. 465, 1825).

With a few remarks upon some points in the case, which materially interested myself, I shall bring this paper to a close.

The auscultatory signs were so peculiar and distinct that, after the first

day, I could frame but one theory by which to explain them, that air and fluid were commingled in the pericardium. Being familiar with the auscultatory signs of pneumothorax, and finding that the movements of the heart in its cavity were producing the same characters of sounds as those determined by the movements of the lung in pneumothorax, I could not but conclude that the physical conditions must be alike. The amphoric note accompanying the cardiac sounds, the metallic tinkling, and the splash, the latter audible at some distance from the patient, were as distinct as I ever heard in pneumothorax, though, except the splash, not so loud. I regret that the percussion phenomena were not more thoroughly observed after the first day, but the patient was so ill and suffering, that it was impossible to annoy him with frequent tapping and shifting of position.

The question whether gas is evolved by spontaneous decomposition, or by an act of secretion in a closed serous sac, is a curious one. The fact that Rokitsky, after his enormous experience in pathological anatomy, should write that he has "never met with an accumulation of air in the pericardium," is a demonstration that decomposition of the materials inclosed in the pericardium in pericarditis, pyo-pericarditis, or hæmo-pericardium, of such a kind as to generate gas, must be infinitely rare; for where else have there been such opportunities of observing this change, if it occurs, as in the experience of the great Vienna pathologist?

The most graphic cases of this disease have been those in which it has been known during life (as in paracentesis, or in wounds of the sac), or it has been ascertained after death, that perforation of the sac had positively taken place. And even when the perforation has not been detected at the autopsy, as in the case of M. Bricheteau (quoted above), how do we know that the autopsy was made with all the care necessary to discern a perforation? I feel sure that, but for the persevering care taken by Dr. Wallace and myself in this case, we might well have missed the small opening found in the œsophagus. My own expectation, as has been stated, was that we should find a pneumonic abscess opening into the pericardium, but seeing that there was no evidence of such a connection between the lung and pericardium, we naturally turned first to the air-passages. The inflation of the lungs by means of the pipe conveyed through the nares, and the subsequent bubbling of air into the pericardium, proved the existence of a communication somewhere, and yet, the pericardial sac, carefully examined by the opening made in its anterior wall, showed no trace of a passage. It was then that we determined to remove the trachea, œsophagus, lungs, and heart in toto from the chest. When this was done, we passed the inflating-tube into the primary bronchia of one side, and inflated the lung, and then did the same with the other, and no air passed into the pericardium. It was proved again, therefore, that there was no communication between the lungs and pericardium. We now opened carefully with

scissors the œsophagus, and the passage of communication by which the air had entered was at once disclosed.

It is true that Dr. Stokes reports a case of pneumo-pericardium (quoted above), in which complete recovery eventually took place, and many would doubtless infer, as M. Bicheteau has done, that the gas or air in the pericardium was the result of decomposition of the fluids poured out by the inflamed surfaces, or of a secretion of gas from the membrane. But to myself there is a more rational explanation than this. In studying the nature of my own case, I have come to the conclusion that the perforation in the œsophagus was one from within outwards, and not from the œsophagus inwards, as must be the case where the pneumo-pericardium results from the erosion of a cancerous ulcer of the œsophagus, or the rupture of a pneumonic abscess or hepatic abscess into the sac. I believe it must have been the result in fact of an effort of nature to evacuate the diseased contents of the pericardium, as happens in the case of empyema when the latter is cured by natural processes; and it becomes an interesting question whether this may not have been the course of events in the case of recovery witnessed by Dr. Stokes. At all events, in the case before us, this seems a more reasonable supposition than the only other one we can think of—that, coincidentally with the double pleurisy and subsequent pericarditis, the patient was the subject of an accidental ulcerative process in the tissues of the œsophagus at the particular spot in that tube where it most nearly approaches the sac of the pericardium. If this event was an accidental concomitant of the pericarditis, of what nature was it? Was it strumous? It was not cancerous.

There is another interesting question brought up by this case—the determination of the pathological law under which the patient became the subject of a fatal inflammatory disease of all the serous membranes of the thorax. Double pleurisy is a rare disease, except as the result of the tubercular diathesis, or of some of the forms of Bright's disease, and even in these affections, except in the latter, how rare is it that the pericardium as well as both pleuræ are attacked. That this combination of serous inflammation of the thorax does occur is proved, however, by Dr. Walshe, who, in the work on the *Diseases of the Lungs*, 3d ed. London, 1860, p. 298, states that he has met with double pleurisy, apparently idiopathic, in young adults of both sexes, as well as in persons advanced in years; in a few cases, in all of which common cold, in connection with emotional excitement, had acted as the exciting cause. He states, also, "that the gravity of the seizure is enhanced by (as far as I have seen) the certainty that the pericardium will become involved; in one of my cases the peritoneum followed. There is obviously a proclivity to general serous inflammation. The lung-substance, wholly free at the outset, sometimes becomes slightly and superficially implicated at the close." In all four cases death

resulted. Dr. Walshe remarks upon the fact that systematic writers seldom allude to this curious form of disease.

Neither Fuller, Flint, Jaccoud, nor Aitken refer to this peculiar form of double pleurisy. They do not seem to have met with it. In referring to double pleurisy, they appear to consider that it occurs only as the result of some diathetic fault, as anæmia, pyæmia, blood-poisoning in general, eruptive fevers, Bright's disease, rheumatism, tuberculosis, carcinoma, alcoholism, or syphilis. In my case, if the disease was not idiopathic, as Dr. Walshe supposes his four cases to have been, it must have been, I think, the result of the phthisical tendency the patient exhibited. A year before the fatal attack he had had an attack of pulmonic disorder which caused great anxiety, and which led to the suspicion that he was tuberculous, and though the autopsy showed that no tubercle had formed, a sufficient amount of cheesy deposit was found to justify the opinion as to the probably phthisical character of the patient's constitution.

It is proper to call attention again to the fact that the father of the patient had suffered from acute rheumatism, having had in early life several attacks of prolonged rheumatic fever. Whether a strong rheumatic family element may have anything to do with these extensive serous inflammations is a question which can be solved only by further observation.

ART. IV.—*Tubo-Uterine or Interstitial Pregnancy.* By R. H. FITZ, M.D.

Read before the Boston Society for Medical Observation. (With two wood-cuts.)

CASES of interstitial pregnancy are so rare that each specimen which might suggest itself as one of this class should receive the most careful attention. This becomes all the more necessary as the criticism of previously recorded cases, by subsequent observers, shows that the term has been loosely applied in many instances, especially to the earlier cases, though some of those more recently reported have been found equally open to the same charge. The very term suggests the seat of the ovum within the muscular structure of the uterus, and an empty uterine cavity with an adjoining, even a neighbouring sac, have often suggested the idea to be maintained. Such a specimen being thus named, theoretical explanations were hastily sought for, as that of Breschet, who suggested that the egg must have made its way into the open mouths of veins in the mucous membrane lining the cavity of the uterus; or that of Cazeaux, who could imagine a bifurcation of the Fallopian tube within the uterine wall, or a passage of the ovum into the canal of Gärtner.

An anatomical basis for the first of these conditions has never been observed, and, as the existence of the latter near the fundus of the adult human uterus may well be doubted, better grounds are required. Even did Gärtner's canal remain permanently open, it would be difficult to imagine the presence of the ovum within it, but such a possibility being granted, the anatomical relations with the adnexa of the uterus would be such that the question of tubal pregnancy rather than the interstitial form would have to be considered.

Of the various forms of extra-uterine pregnancy the present may be considered the rarest. English authors have generally made use of the term interstitial, supposing the ovum to have developed within the uterine wall. The term tubo-uterine implies primary development within the tube, and is of more general application.

The theories of origin previously alluded to being unsatisfactory, what should cause the detention of the ovum in its passage to the normal nidus? Psychological causes have been imagined, as surprise during coitus, fear of surprise, or fear as to the result. Burdach and Lallemand¹ have recorded three such cases, where the inference seemed justifiable to them.

More clearly established mechanical causes are sought for than a muscular paralysis thus brought about, or a cessation of ciliary movements so produced. Observation and analogy find many such obstructions to the passage of the ovum, such as might be produced by strictures from within or without, or from pellets of mucus in the tube. The first thought would be that similar conditions should prevent impregnation. Yet this might not necessarily follow. Litzmann² suggests that exfoliation of the ciliated epithelium would hinder the onward movement of the egg. That such a condition should result from inflammation of the living membrane of the tube seems quite plausible, and might be considered in a case of simple tubal pregnancy. But to permit tubo-uterine gestation the ovum must reach that portion of the canal intervening between the cavity of the uterus and the insertion of the tube into its wall. The catarrhal process which should affect the one part of the tube would be very likely to act upon the other. A too rapid growth of the ovum has also been suggested, ulcers, and swelling of mucous membrane of the tube, etc. In short, the ingenuity of the individual observer has been taxed to account for what is now generally considered to be the result, the detention of the impregnated ovum within that portion of the tubal canal seated within the muscular wall of the uterus. It would seem of trifling importance whether the uterine openings were closed early or late; that such may eventually occur, and in the indisputable cases must occur, is evident. Klebs³ would explain this occurrence by demanding a diverticulum communicating with the tube in which the ovum must lodge.

¹ Czihak, Scanzoni's Beitrage, vol. iv. p. 75.

² Czihak, loc. cit., p. 77.

³ Handbuch der Path. Anat., p. 909. Berlin, 1873.

Hecker¹ and Baart de la Faille² have collected the cases of this curious condition, in part, for the purpose of educing such influences as might be suggested by comparison. Hecker's paper appeared in 1859, up to which time he states that twenty-six cases had been published. Baart de la Faille, in 1867, eliminates from this series ten, which he considers incorrectly classified, leaving only sixteen to which the term could be properly applied.

To these he adds one by Junge,³ and another observed by himself.⁴ A third is described by Poppel in 1868,⁵ who also calls attention to the case of Schultze,⁶ in all twenty cases. Since this time Hicks,⁷ Lott,⁸ Edgar,⁹ and Malmberg,¹⁰ have recorded cases where *post-mortem* examinations have been made. The last three cases, as reported, are not freed from the possibility of error in judgment. Twenty-one cases then remain, from which Vomdorfer's¹¹ may be eliminated as suggesting the probable retention of the fœtus in the uterine cavity. Further, Poppel is inclined to omit the cases of Schultze and Baart de la Faille from the list. Eighteen cases, with the present, nineteen, include those which have thus far been recorded, and to which the term may be unquestionably applied. The necessity for so much elimination indicates the difficulties in the way of diagnosis—a point which will be spoken of at greater length hereafter.

Through the kindness of Dr. A. T. Davison, of South Boston, in whose practice the following case occurred, and who has generously presented the accompanying specimen to the college museum, also through the politeness of Dr. M. F. Gavin, who has furnished me with an account of the autopsy, I am enabled to record this additional case.

Dr. Davison writes:—

"Mrs.——, æt. twenty-six, is the mother of one child, aged six years. She has never had miscarriages, and has enjoyed good health until April, 1873, with the exception of vague pains in the right side for the past two years.

"Her first labour was very severe, lasting two days; a normal convalescence resulted. She considers herself to have become pregnant early in April, from the condition of the catamenia, and the subsequent occurrence of vomiting, together with pains referred to the right iliac region. This pain has been more or less constant since the time of supposed impregnation. Menstruation did not absolutely cease in April, a slight 'show' occurring at this time as well as in May.

"My first visit was made June 15, 1873. She was lying upon her back in bed, the face flushed, knees drawn up, and an expression of agony depicted on her face. She stated that she had been suffering excruciating pains in the uterus for two hours previous to my arrival, and considered that a miscarriage was taking place.

¹ Monatsschr. f. Gebeskde., xiii. 98.

² Ibid., xxxi. 459.

³ Ibid., 1865, xxvi. p. 241.

⁴ Loc. cit.

⁵ Monatsschr. f. Gebeskde., xxxi. 208.

⁶ Wurzburg. Med. Zeitschr., iv. 1863, p. 178.

⁷ Trans. of Obstet. Soc. 1868, p. 57.

⁸ Sitzb. d. Ver. d. Aerzt. in Steirmark.

⁹ St. Louis Med. and Surg. Journ. 1871.

¹⁰ Hygeia, 1871, p. 436.

¹¹ Oest. Jahrb., Jan. 1848. Seanzoni's Beitr. 4, 107.

"A vaginal examination being made, there was no dilatation of the os, nor flowing, a slight degree of enlargement of the uterus alone being ascertained.

"Sulphate of morphia was ordered to be given at intervals of one hour till her pain should be relieved.

"The following morning I again saw the patient. She occupied the same position as at the previous visit, and begged not to be moved. Pulse 100. She stated that after three doses of the medicine, each of one-fifth of a grain, she was relieved, and rested well during the night. At 7 A. M., while attempting to rise, the pain returned in the same place, and more severe than ever. She took two doses of the morphia, relief being obtained immediately before my visit, at 10 A. M. Five hours after I again visited her.

"She had not suffered from pain during the interval, but I found an extreme pallor of the face and lips, and a condition of marked collapse.

"The stomach refusing to retain anything, I gave an injection of brandy. She sank rapidly, however, and died soon after, twenty-seven hours from the beginning of her symptoms.

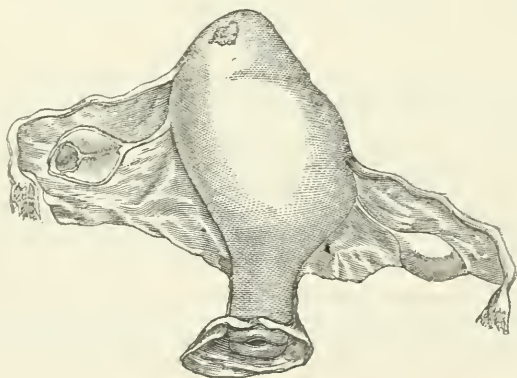
"Suspecting the case to be one of interstitial pregnancy, I obtained permission for the autopsy, which was made seventeen hours after death.

"Dr. Gavin states: 'Body well nourished but exceedingly pallid. Rigor mortis well marked. The abdomen slightly swollen. The peritoneum transparent and free from all signs of inflammation. Its cavity filled with clotted blood, of recent origin, intermingled with the small and large intestines. A large quantity of dark-coloured, liquid blood filled the pelvic cavity. In all six tin basinsful of fluid and clotted blood were removed before the organs were examined.

"The stomach, intestines, spleen, liver, kidneys, and bladder were free from morbid changes. The other organs were not examined. I send the uterus and appendages.'"

I received the specimen in admirable condition on the following day.

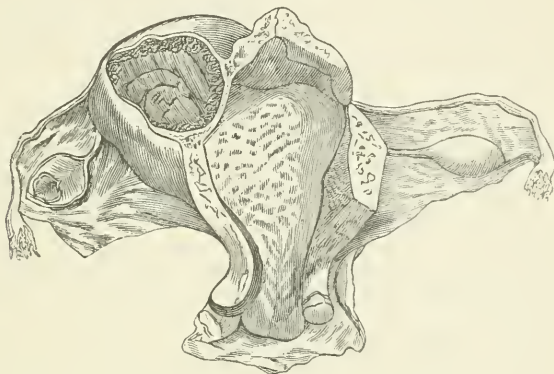
Fig. 1.



The uterus was considerably enlarged, more or less kidney-shaped (see Fig. 1); apparently composed of two portions: the upper oval, rather larger than a hen's egg, inclined to the left, the lower presenting the general appearance of a uniformly enlarged uterus. On the right the distinction between the two portions was distinctly marked, on the left, however, there was merely a continuous surface and border. The peritoneum was continuous over the two portions, the muscular wall seemed also continuous, there being no line of demarcation. The cervix elongated and hypertrophied, the os externum open, appearing as a transverse slit. The

lips enlarged. At the extreme upper portion of the mass, towards the posterior surface, a circular hole existed nearly one-half of an inch in diameter, the edges jagged, everted, exceedingly thin. Directly beneath this opening there was seen a foetus (the back) inclosed within the membranes (see Fig. 2); also several villous masses. The peritoneal surface in the immediate vicinity of this opening was injected and covered with a delicate false membrane.

Fig. 2.



The relation of the Fallopian tubes and ligaments to the uterus was striking. They were attached much higher on the left side than on the right, to the upper third. On the right side they were united at the junction of the middle and lower thirds of the mass.

The insertion of the left round ligament was at the outside of the uterus and foetal sac, separated at this point from the insertion of the Fallopian tube by a space of one and one-quarter inches. The corresponding distance on the left side was three-quarters of an inch.

The organ was exceedingly pale, containing but little blood; numerous fibrous adhesions were formed about the ovaries and tubes, especially on the right side. In the left ovary a recent corpus luteum was found.

Before the uterus was opened the following measurements were taken. The length of the entire mass, $6\frac{1}{2}$ inches; the shortest distance between the attachments of the Fallopian tubes, 5 inches. The left tube $5\frac{1}{2}$ inches long, the right, 6 inches. The left ovarian ligament 1 inch, the right, $1\frac{1}{2}$ inches in length.

The greatest transverse diameter of the uterus, 4 inches. From the middle of the anterior lip of the uterus to the attached portion of the right tube, 4 inches; to that of the left, $5\frac{3}{4}$ inches. These are to be understood as surface measurements. The organ was opened from behind by a longitudinal incision extending to the fundus of the uterus, from the termination of which two lateral cuts were made in the direction of the attachments of the Fallopian tubes; that to the left passed directly over the foetus, which was found enveloped in the membranes.

The uterus was seen to be considerably enlarged and symmetrically so, excluding the portion containing the foetus. The cervical canal, $1\frac{1}{2}$ inches, the uterine cavity $4\frac{1}{2}$ inches long. From the inner opening of the right tube to the foetal membranes, at a right angle, to the longitudinal axis of the uterus, $2\frac{1}{4}$ inches. The greatest thickness of the uterine wall was $\frac{2}{3}$

of an inch. The length of the ovum, $2\frac{1}{2}$ inches. The lining membrane of the uterus was very much swollen, pale, and soft. The surface roughened, often folded, velvety. The cervix contained a viscid hyaline mucus, the arbor vitæ indistinct.

The uterine wall about the fœtus is less than two lines in thickness, moderately translucent. That portion intervening between the uterine cavity and the membranes was composed of spindle-shaped muscular cells, and contained numerous venous sinuses.

The wall of the fœtal sac was made up of involuntary muscular tissue, and large veins, sinuses, were cut across in making the section previously spoken of. The inner surface of this wall was roughened, connected here and there with the chorion by villi. Nothing resembling a decidua was observed.

The posterior surface of the chorion was bald, elsewhere bearing numerous villous tufts. The head of the fœtus was directed towards the uterine cavity, in the direction of its breech, the inner opening of the tube. The size of the fœtus corresponded with that of one of ten weeks. Clotted blood was found between the villi in the immediate vicinity of the hole in the uterine wall.

The canal of the extra-uterine portions of both Fallopian tubes patent. The left terminated abruptly at its union with the uterus, this end being slightly dilated.

The innermost portion of the left tube was opened from the uterine cavity. It was found to be an inch in length, apparently terminating in a fibrous cord, intimately connected with which were several villi.

The course of this portion of the tube was upwards and outwards, in that portion of the uterine substance lying above the fœtus. The inner, lower portion of the wall was exceedingly thin, continuous with the fœtal sac. The distance between these two ends of the intra-uterine portions of the tube was 2 inches. The lining membrane of the tube, intra- as well as extra-uterine, was homogeneous, smooth, and shining, without a trace of decidua.

In the majority of instances of this curious anomaly hitherto reported, the fœtus has been found outside of its sac. An additional interest is therefore derived from the present specimen, and too detailed an examination could hardly be made. That the diagnosis is not without difficulty, has already been shown by the necessity of elimination in the previously recorded observations.

The question would arise whether this might not be a case of tubal pregnancy, or one occurring in a rudimentary horn? An argument in favour of the former view might be derived from the fact that the tube on this side was shorter, by one-half an inch, than its fellow. It is to be remembered, however, that a like dissimilarity exists with regard to the ovarian ligaments. It is also well known that such relations often exist, in many instances to be attributed to conditions occurring during fœtal life, deviations of development. Pathological changes might be offered as an explanation were it to be considered that the irregularity occurred after birth. Evidence of such is lacking.

Positive testimony against the view is derived from the evident conti-

nity of the uterus and the foetal sac, and the presence of muscular tissue in the latter, also from the relations of the round ligament. Hyrtl has shown that this is a true prolongation of the uterus, and Kussmaul¹ has called attention to the necessity of its being between the uterus and the foetal sac in tubal pregnancy, while in interstitial pregnancy it would arise from the surface of the sac, at the outside, as in the present instance. So simple as this means of differential diagnosis may seem, it is yet universally conceded as sufficient.

Why, then, is this not an impregnated rudimentary horn?

In a uterus of this character one might expect to find evidence of irregular development as regards the shape of the uterus, the insertion of the ligaments, indications of an incomplete septum, all of which are lacking. The cavity of the uterus is apparently normal, the ligaments are symmetrically attached, making due allowance for the presence of the ovum. The walls of the uterus too are symmetrically thickened. Of greater weight is the evidence furnished by the examination of the Fallopian tube. The inner end, very much elongated, is found to be directly continuous with the uterine cavity, and to pass outwards in the tissue of the uterus, forming the envelope of the foetus. Hence one has the cavity of the uterus entire, with its two Fallopian tubes symmetrically communicating, and in the proper position. Of equal value is the appearance of the lining membrane of the right tube. Poppel² has previously called attention to this point, one which is of like importance with the relations of the round ligament. When pregnancy goes on in the uterus bicornis, the decidua formation takes place as in the usual conditions. At least such is probably the case, for Klob³ states that in most, if not in all cases of pregnancy in the one horn, the mucous membrane of the other is likewise developed as a decidua.

The same author states⁴ that in tubal pregnancy a true decidua reflexa does not occur, though the mucous membrane becomes developed into folds, apparently for the reception of the villi. Should a decidua of this character form it must rapidly disappear, as neither in the case of Poppel nor in the present one does any evidence of such exist.

Further, that portion of the tube to be distinctly recognized as such, bears a membrane in no way differing in appearance from that occurring in the unimpregnated conditions.

It can be easily seen that the openness of the uterine end of the tube lessens this difficulty, as in the more obscure cases of foetation in a rudimentary horn no communication with the uterine cavity exists.

¹ Von dem Mangel, der Verkümmerung und Verdoppelung der Gebärmutter, etc. Würzburg, 1859. Poppel, loc. cit., p. 209.

² Loc. cit., p. 215.

³ Path. Anat. der Weibl., Sexual Organs, p. 31. Wien, 1864.

⁴ Loc. cit., p. 524.

This observation can be regarded as applying alone to that portion of the tube lying within the uterine wall, as a decidua has been noticed in connection with tubal pregnancies, and Særoeder¹ agrees with Hennig² that the tube may form a dense decidua.

Klob³ speaks of the presence of a peritoneal fold in uterus bicornis, extending from the anterior wall of the rectum, between the two halves of the uterus, to the fundus of the bladder. This fold has been previously noticed, and should be sought for in cases of suspected interstitial pregnancy. Nothing of this nature is to be seen in the present specimen.

Baart de la Faille⁴ has deduced, from the comparison of the seventeen cases collected by himself, that the pregnancy occurred nine times on the right side. In eleven of the cases the women had previously borne children. A fatal termination occurred in all; in two between six and twenty-four hours; in five after twenty-four hours. The duration of the pregnancy was—

6 weeks	.	.	.	.	.	.	in one case
8 "	.	.	.	.	.	.	" "
10-12 "	.	.	.	.	.	.	" six cases
16 "	.	.	.	.	.	.	" one case
Longer than 16 weeks.	.	.	.	.	.	.	" five cases.

The fatal termination in the vast majority of cases results from rupture of the sac and hemorrhage—the latter usually intra-abdominal. Hicks's case shows that the fœtus may be expelled through the natural passages, a communication between the uterine cavity and that of the sac being established.

Much more frequently, however, the fœtus escapes into the abdominal cavity, its subsequent history not differing from that of other forms of extra-uterine pregnancy. The difficulty of diagnosis during life is so apparent that the expediency of operative measures would be governed by similar rules to those applied to ordinary cases of abdominal pregnancy. An opening in the sac might be made from the peritoneal cavity or from that of the uterus. The condition of the wall between the sac and the uterus would suggest the probability of dangerous hemorrhage were it opened. Expulsive efforts on the part of the sac might be attended with rupture of the exceedingly thin wall and subsequent intra-abdominal hemorrhage, as occurred in the case reported by Hicks.

This result would not militate against perforation from within, as rupture may have taken place before the communication with the uterine cavity had been made. A further method of operation has been suggested by Friedreich,⁵ and successfully carried out by him. Having established the diagnosis of tubal pregnancy, he made repeated injections of mor-

¹ *Lehrb. d. Geburtshulfe*, p. 211, Bonn, 1871.

² *Monatsschr. f. Geburtskde.* 33, p. 265.

³ *Op. cit.*, p. 31.

⁴ *Loc. cit.*, p. 463.

⁵ *Virch. Arch.*, xxiv. p. 312.

phia into the sac by means of the subcutaneous syringe, with the hope of destroying the ovum. A favourable result followed; the tumour diminished in size, and the patient left the hospital well. The diagnosis, unfortunately, was inferential, formed by exclusion; the result of the method of treatment, however, was most satisfactory.

ART. V.—*Membranous Enteritis, with Cases.* By WM. M. FINDLEY, M.D., of Altoona, Pa.

It was my fortune soon after graduation and entrance upon professional duties to be confronted by a case of disease which caused me much study and research to arrive at a correct diagnosis. This impressed me so that I began to make diligent search in regard to it, and found that in our country very little had been written upon this subject, it having been confounded with dysentery, tabes mesenterica, etc. My first case occurred, was treated, and cured some time before Da Costa wrote his article upon this disease in the *American Journal of Medical Sciences* for October, 1871, or the extract from a thesis in the same Journal for July, 1873, and for that reason my treatment was original in the sense of being the result of a careful study of the disease, and the use of remedies which Da Costa has not found of much use. Having now had three well-marked cases of this disease, and all brought to a successful termination, in the interest of the profession it is deemed proper to present them as tending to elucidate the course of treatment in an acknowledged stubborn disease.

Before presenting the cases, let us make some inquiries—

1st. As to the literature of the disease: I can add nothing to the list given in the very interesting and highly instructive monograph of Prof. Da Costa, referred to above, wherein we find Paulus Ægineta, Kaempfer, Good, Todd, Sir James Simpson, Cruveilhier, Laboulbène, Powell, and lately Whitehead, given as authors of papers upon this obscure and persistent disease. To those anxious to extend their studies, a reference to the above-mentioned monograph is asked, for the titles of the articles by their various authors, as this article is merely intended as clinical.

2d. As to the membranous discharge: the description, as found in Prof. Da Costa's article, is far more explicit than anything I could say concerning its structure and constituent parts, as I only made rough experimentation with water, alcohol, and atmosphere upon it. One fact I noticed, that I have not seen mentioned, is the splitting of some few of the better organized portions in their long axis, showing higher organization than ordinarily found.

With these preliminary remarks I shall proceed to relate the cases.

CASE I. Mrs. H. J., coloured, aged 40, the mother of eight children, had enjoyed good health until April, 1867, after which time she grew worse, until October, 1867, when she says she had an abortion; to my mind it is more likely that it was a dysmenorrhœal clot; had hectic fever afterwards, was treated with mercury until she says she was salivated, when for the first time she complained of burning pains in the bowels, and began to pass mucus and "long strings of white stuff like pieces of entrails," as she expressed it, accompanied, while voiding them, with violent pain. The condition of her bowels at this time was constipated; was said to have hysterical paroxysms on two or three occasions by her attendants; her mind, however, was particularly bright at certain times. Her appetite was very capricious and indigestion constant. Has had very severe pain at menstrual periods since. Says she had a burning pain in the left side, and worse for some days before menstruation, which was very painful, and was accompanied at the same time with the passage of large quantities of the membrane.

I first saw her April, 1868, finding her in bed unable to rise, and expecting to die; hectic fever, enlarged cervical glands on left side, some evidence of pulmonary trouble, as I was satisfied afterwards, from enlarged thoracic lymphatics pressing on the bronchi and pulmonary substance, anorexia, constipation, and a very offensive leucorrhœal discharge, with the voiding of large quantities of the peculiar shreds and portions of membrane, united to present a wretched case and one almost hopeless. Satisfied that the leucorrhœal discharge was one strong evidence of severe uterine disease, I made a careful digital and specular examination, and found the cervix much hypertrophied, os patulous, admitting the index finger, velvety, and prolapsed somewhat—this to the finger. The speculum shows, in addition, a vivid red oval surface, having the os for its centre, which is open and slit-like, about five or six lines all around with a long ragged ulcer extending up into the cervix out of sight. After syringing to cleanse the parts, I applied the solid stick of nitrate of silver to the ulcer, and tincture of iodine and glycerin, equal parts, to the entire cervix. These local applications were made to the uterus every third, sixth, or tenth day, as deemed best—the longer intervals being most frequently all that were required. Menstruation was normal the very next time, and has so continued up to the present. In the course of three or four months the ulcerated condition of the cervix disappeared, after the use of a sponge-tent, to enable me to apply remedies to the sore *inside* of the os as well as externally. The cervix itself became reduced to normal size; the os resumed its natural shape and calibre, and all feeling of prolapsed condition of uterus has disappeared with the other symptoms.

The constant use of topical applications of cold water was most useful as well as grateful during the time of the uterine inflammation and ulceration. During all this time the affection of the bowels continued, but, by combining proper remedies, it also was finally and successfully combated, and if not cured, a word I seldom like to use, at least got well. At one time, after a night of most fearful and distressing pain which anodynes did not seem to relieve much, she voided after much straining a "string," as she called it, a foot or more long, while each succeeding stool contained large quantities of smaller fragments. The paroxysms of intense burning pain were generally preceded by a few days of indigestion, colicky pains, and, as described, "a dead feeling in the bowels," occurring sometimes every two weeks, at other times every four or eight weeks, but becoming

less disturbing and less frequent until finally she recovered entirely in about ten months. The treatment in this case was conducted upon principles expressly directed to combat the supposed cause, viz., scrofulosis. And before entering upon the consideration of the treatment I shall speak of this complication. The general appearance of the patient indicated that she was scrofulous, hardly hereditary, but acquired. She was of the lymphatic type of temperament, although naturally energetic; but it struck me very forcibly that she needed nature's great restorers, sunlight and fresh air, as much as any other medicaments. The cervical glands, and evidently, although unseen, the thoracic and pelvic glands, were much enlarged and tender, but at no time threatening suppuration. She was very weak and anæmic, with very restless nights, and, to add to her troubles, the effects of mercurialization were present. For these conditions, in addition to the topical uterine treatment noticed above, I gave her liq. potass. arsen., ext. bell. fl., and tinct. cinch. comp., varying the cinchona with hops and iron when thought best, *but never omitted the arsenic over two or three days*. Externally belladonna and iodine in ointment were persisted in faithfully. Especial attention was paid to the diet, and, in the early part of the treatment of the case, cold sage tea soon controlled the hectic sweats. When I first saw her it was impossible for her to be out of bed, but in three weeks she was up, and as soon as able I had her go out every day into the air, and particularly the sunlight, as well as sit in a warm exposure all the time possible. After the uterine trouble was relieved this was most faithfully carried out. Rectal injections of simple cold water did more in the course of the disease to relieve the constipated condition than anything used, and were in addition very grateful or comforting to the sufferer. After six months' persistent treatment I ceased calling, as there was such decided improvement, but heard from her regularly for some three months longer, during which time she persisted in the use of the prescribed remedies; and, since that time until the present, she has enjoyed perfect health.

This case seems to be corroborative of Grantham's assertion, "that mercury is the cause" of some of these cases at least, for I verily believe that it was the exciting cause, whatever may have been the real underlying predisposition which looks towards a diathetic condition, only needing the spark to fire the train.

CASE II. Mrs. D. G., aged 43, consulted me for "swelling of the stomach, and feeling as though she was pregnant and felt the child move;" is near the menopause, and has not had any children for ten years, although she had what was thought to be a miscarriage some two years ago, and has had difficult menstruation ever since, with profuse hemorrhage occasionally. Three months after, on becoming convinced that she was not pregnant, and the distress in abdomen increasing, she placed herself under my care. Complained of a peculiar hard pain in the left side of abdomen, almost constant, and colicky pains at times. Is of an hysterical or epileptic character, nervo-lymphatic temperament; found her several times comatose from the pain. Began then to pass dysmenorrhœal casts, which I examined, and in a few days casts of membrane from the bowels, specimens of which I have now in my possession, and which seem to be rather better organized than ordinary. The paroxysms first announced themselves in the dyspeptic symptoms described in the above case (No. 1), and lasted during the menstrual period, declining rapidly thereafter. In this case there was no scrofulous complication, and not many attacks except during menstruation.

Having dissipated the notion she entertained, that she was labouring under an extra-uterine pregnancy, and satisfied her that the disease, although a persistent one, yet was not a hopeless one, she entered into the treatment with a will, and recovered after a year of the greatest care. In this case, the patient was unable to be about when getting up without the constant use of a binder or abdominal support, merely as she said to hold her bowels up and relieve the soreness their weight caused, as there was no marked prolapsus. Vesicants had no effect on this patient, so belladonna and iodine ointments were used over the abdomen for a long period. Bismuth, iron, and strychnia sometimes, but most frequently the liq. potass. ars. in cinchona or hops. Constant care as to the proper diet, fresh air, and sunlight were insisted upon. Enemata of cold water, and vaginal injections of the same, relieved the persistent constipation and uterine soreness. On one or two occasions it was necessary to use diuretics, and again to relieve a strong tendency to strangury. There was no uterine disease here, as in the first case; the dysmenorrhœal casts and the intestinal casts appearing to be produced by a common cause as yet unknown to me. When I say no disease of the uterus, I mean of an ulcerative character, or giving rise to such constant leucorrhœal discharge as in the first case, although after each menstrual time some discharge was to be noticed. On specular examination, no severe lesion was detected.

CASE III. Mrs. E. W., coloured, æt. 21, was taken sick in the early spring of this present year, with some obscure affection of the bowels. Has never been a very healthy person; appearing to lack development. Had violent pains "in the stomach," and after two days of constant tormina and tenesmus, she voided a cast nearly nine inches long, followed by a sudden and profuse hemorrhage in a short time. She has since voided but little of the peculiar membranous casts, suffering with a severe pain in the left half of the abdomen frequently since. A troublesome cough has harassed her greatly, and indigestion, hectic fever, and night sweats have followed. I first saw her after being in bed some two months, and found her with a mammary abscess, which was lanced, with great relief to her. She is constantly constipated, and has the flabby, dirty tongue of one suffering from indigestion and its concomitants. The menstrual periods come and go without any pain or distress whatever, and she has no leucorrhœal discharges. Pulse slightly accelerated, apparently from the bronchial trouble. Great resemblance to the condition found in the ileo-cæcal region in typhoid fever, all over the abdomen and especially to the left side, without much pain on pressure however. Colicky pain after some articles of food, or when insufficient food was taken, the result of flatulence and the torpid condition of the bowels, was present. Nervous and irritable at times, with marked prostration after an attack of pain. The first thing to give relief in this case was a powder of Dover's powder, bismuth, and quinia, and locally sinapisms with dry heat afterward, and a constitutional treatment of liq. ferri iodid. Vegetables and fruit in moderate quantities, with plenty of milk. Progress was marked and recovery speedy—no relapse. I should add that she has never been pregnant; and that one very useful remedy was inunction with cod-liver oil twice a day over the abdomen.

Some of the noticeable features in these three cases are:—

The fact that the cases are all in females; in two of the cases associated with severe uterine diseases of totally different kind; and in the third case

apparently unassociated with any uterine trouble. In the first case, I never saw anything like a dysmenorrhœal cast; only conjectured such to be the case when she said she had aborted. The fact that in Cases I. and III. there was a scrofulous tendency, more acquired possibly than hereditary, complicating seriously, and rendering the treatment more varied and prolonged. That in all three cases, the severest and most constant pain was in the region of the left ovary, and sigmoid flexure of the colon, with marked tenderness over that region at and for a few days before the severer attacks. That febrile movement was not at all marked in any of the cases, as stated by others; a sluggish state of circulation, with, however, a constant disposition to grow worse, until treated. That treatment gave such marked relief, and that the patients continue to-day well and without a return of the disease, or any appearance of a likelihood to the same.

Hoping that my good fortune in these cases may stimulate some one struggling with an obstinate case of this kind to persevere, although he may not find the remedies made use of as efficient in each individual case as has been done in my cases, I place these clinical facts on record for what they are worth.

502 TWELFTH ST., ALTOONA, PA., October, 1874.

ART. VI.—*On the Use of Mercury in the Late Stages of Syphilis.* By FRED. R. STURGIS, M.D., Lecturer on Venereal Diseases in the Medical Department of the University of the City of New York; one of the Surgeons to Charity Hospital, Blackwell's Island, etc. etc.

No subject in the whole range of therapeutics merits more careful consideration; nor is there any in which opinions have undergone more important modifications than the one which heads this paper.

The general treatment of this disease hinges upon the question: "Shall we or shall we not use mercury? and, if not, what shall we substitute for it?" Without entering into any discursive argument, *pro* and *con*, of the use of mercury in the early stages of syphilis, I frankly avow myself a strong believer in its efficacy in this disease; and no one who has studied Mr. Hutchinson's paper, read before the British Medical Association in 1873, can, I think, fail to be struck with the logical force of his reasoning; nor but feel that he has the best of the argument, as opposed to the school of the anti-mercurialists.

I do not profess to consider mercury a specific for syphilis any more than I consider any drug as a specific; the day for belief in such opinions is passing away; but I do claim that this much-abused mineral is the most trustworthy weapon we have with which to fight the disease; and the

fact that some cases of syphilis can and do get well without the use of mercury militates nothing whatever against its value as a therapeutic agent in this form of disease.

It is very likely that many cases of syphilis would get well were nothing done beyond attending to the patient's general health and hygienic condition, inasmuch as the disease has as great a tendency to self-limitation as typhoid, scarlet fever, or measles; but, by pursuing such a course continuously, the surgeon would be running too much of a risk with his patient—because, in a case of the primary or early secondary lesions, none of us are in a position, as yet, to state positively what the upshot of the disease is to be; we may be able to get some pretty good general idea as to how subsequent symptoms will show themselves by the appearance of the present manifestations, but we cannot be positive. If now we withhold mercury from our patient, we are depriving him of one means of cure, and one which has stood the test of time as long certainly as has the other method of treatment, indeed, I think, longer; and which has the property (and this is a point allowed by the anti-mercurialists) of dispelling present symptoms more speedily than any other remedy. The question is more especially about relapses, and on this ground the two sides take issue. It does not appear to me that the anti-mercurialists have brought forward sufficient data to establish their theory convincingly; and when we now are satisfied, clinically, that the larger proportion of severe late lesions are seen in those who have taken mercury either imperfectly or none at all, and as we further recognize that the periostoses, necroses, and nerve lesions are a part of the natural course of the disease, and that they are less liable to occur, *ceteris paribus*, in those who have undergone a thorough course of treatment by mercury, it very naturally causes us seriously to ask the question: "Is mercury the baneful agent which some say it is?" And, in answer to the question, I am free to say it is not. On the contrary, the chances of relapses are diminished by its use.

But the point to which I wish to call more immediate attention is to the use of mercury in the later and deep lesions of syphilis—the so-called tertiary stage—and to maintain its proper administration in this stage is as important as it is in the earlier and more superficial symptoms.

At the séance of the Congrès Médical de France, held Sept. 24, 1872, the general feeling was in favour of using mercury in the treatment of syphilis, although several of the members present were inclined to limit its use to the earlier stages, and to consider its advantage in the so-called tertiary lesions as secondary to the iodide of potassium. Without at all derogating from the value of this latter medication, I have seen so many cases where its use has been attended with improvement only up to a certain point, the disease being finally cured by the exhibition of mercury

in some form or other, that I have come to consider the iodide as the *adjuvant* and *not* as the principal agent in the treatment.

As I am anxious here to present my own views in order to elicit the opinions of others experienced in these matters, and to learn the relative value which they attach to the two remedies, iodide of potassium and mercury, I will present the abstract of two cases of advanced syphilis, which will serve as examples, where the iodide had only a temporary effect, and where mercury was finally resorted to for effecting a permanent result.

CASE I. A woman 31 years of age, who was under the care of Dr. Roosa at the Manhattan Eye and Ear Hospital, and whom I saw in consultation with him, had *iritis*, *choroiditis disseminata*, and *neuritis* of both eyes, due to a syphilis of several years' duration. The previous symptoms had been of a mild form, and principally confined to sore throat and headache until the affection of the eyes began, one year before. Vision: right eye, $\frac{2}{5}$; left eye, $\frac{2}{7}$. Although mercurials were used at first, in the form of the bichloride, internally, with iodide of potassium, the mercury was for some reason suspended, and the chief dependence placed upon the iodide. Vision in both eyes improved to $\frac{2}{3}$, and there remained, neither improving nor diminishing. The amount of potassium taken then was gr. 150 in the day in three doses.

Matters went on thus for some ten or eleven weeks, when there occurred a gummous infiltration in the left sub-clavicular space, attended with enlargement of the clavicle and supra-clavicular glands, and tenderness on pressure extending to the acromion process of the scapula of the same side.

The iodide was still used, with the addition of syr. ferri iodidi, gtt. x ter die, but no mercurial. Vision in both eyes still remained $\frac{2}{3}$. During the next three days, no improvement resulting, recourse was had to the emplastr. de Vigo cum mercurio locally to the clavicular and sub-clavicular enlargements, followed a few days later by mercurial inunctions in drachm doses at night, combined with iodide of potassium. The result was extremely gratifying; in a week the enlargement had materially diminished in size, the pain was much less, and vision, which before was $\frac{2}{3}$, was in the right eye 1, and in the left minus 1; by that I mean she miscalled two letters in No. 20 Snellen scale, calling *U* *G*, and *vice versa*.

The ophthalmoscopic examination, I have purposely delayed giving. The iritis got well under the iodide treatment, but the choroiditis went on to atrophy, and the neuritis increased. As soon as the mercury fairly took hold, the neuritis began to improve, the nerve entrance became more defined in outline and of a rosier hue; in other words, improvement commenced.

CASE II. is that of a young man who contracted his chancre in 1863, which was followed by ulcers upon the leg, neuralgic and rheumatic pains, and sore throat. In 1870, he had an attack of hemiplegia, from which he recovered. The treatment up to that time was by the iodide of potassium only.

In June, 1873, he came to me with an ulcerating gumma seated under the left arm, below the axilla and close to the upper border of the pec-

toralis major, with the statement that it commenced as a small painless swelling, which slowly increased, softened, and opened. When I saw it, the ulcer was about 1'' in diameter, seated upon a brawny base, surrounded with a dusky red areola, with a gray pultaceous floor, adherent to the tissues beneath, and secreting a thin serum.

I determined to give the iodide a fair chance, and after four months of tedious treatment by this salt only the ulcer finally closed. He used the iodide in 50 grain doses three times daily.

In April, 1874, he returned, saying the ulcer had broken out in the same spot, and at a second point just below. On examination I found it as he had said. The ulcers bore the same characters as the one of June, 1873, the only difference being that they were smaller. He also complained of intercostal neuralgia of left side, which was aggravated at night.

Recollecting the tedium of the 1873 treatment, I resolved to use mercury in combination with the iodide; and with that object he was directed to use one grain of the protoiodide of mercury, and 100 grains of the iodide daily in two doses. In four days the ulcer on the old site had entirely healed, the new ulcer was one-half of its former size, and the intercostal neuralgia had disappeared. I saw him a short time after in the street, and he told me he was "about well." I, of course, had no chance to examine the side.

Now, here are two cases which will serve to illustrate the effect of the iodide when used alone, and in both we find that although it unquestionably did improve the condition of the patients, it did not go far enough to produce a radical cure, nor did it prevent relapses, in the one case during the treatment, and in the other in six months after the iodide had been omitted. And another feature is noticeable: the instant mercury was used, improvement was much more rapid than it had been where none had been employed.

The form and manner of giving the mineral is not an unimportant matter. My favourite method of giving mercury is by inunction, and the usual objections made to its use in this way may be obviated by using it to the soles of the feet and wearing the same stockings night and day. In that way the soiling of the linen may be prevented.

One of the neatest preparations of mercury I have ever used is the oleate of the 20 per cent. strength, either with or without morphia. This is given in from half a drachm to drachm doses, externally, at night. The absorption is much more rapid than is the case with the ordinary ointment; it is a much cleaner preparation, and, acting more forcibly, less of it is required. In speaking thus of inunction, I do not intend to do injustice to the other means at our disposal, such as the mercurial vapour bath, nor the internal treatment. All have their appropriate seasons of use, but of them all, the inunction method seems to me the one least open to objection, and one which, in the long run, will give the most satisfaction. The only preparation against which I acknowledge prejudice is the bichloride; in my hands it has been liable to produce the toxic before it

does the therapeutic action, and it does not admit of the free use which other and milder preparations do.

The only other mode of administration which I have left unmentioned is the hypodermic one. It is objectionable in several ways, and not the least of them is the attendant pain, notwithstanding the use of morphia with the injection.

With regard to the manner of giving, not only mercury, but the iodide of potassium in these late stages of syphilis, I would state that in the first place we should not be afraid to use the drug, in the face of so dangerous a condition of things. I have no doubt that among my readers many can bear me out in the assertion that the disease will hold its own against small doses when large ones crush it. Therefore, the doses should be cautiously run up from moderate ones to the point of toleration, being watchful and ready to diminish or abandon the amount should occasion require, or to resort to some other preparation. But with prudence that will seldom occur, and the mercurial, so far from proving an injury, will be a positive advantage; in place of acting as a depressant, it will have a tonic effect, and the patient will improve, not only as regards the syphilis, but in general health as well.

It may very pertinently be asked how long these large doses are to last. I answer until the symptoms disappear, or cogent reasons in the patient's condition require its abandonment. This latter reason will only obtain in but few instances, so the former one will really be the guide. And after all symptoms have entirely vanished, it will be well to continue treatment for a month subsequently—not that by so doing you will insure patients against another attack, but will afford them a better chance of escape. I know that this is contrary to the opinions of many credible and trustworthy observers, but my own experience leads to this view.

After this month's treatment is finished, a course of tonics may perhaps be advisable; and, although it scarcely comes within the scope of this paper to do more than allude to them, it must be borne in mind that we, as scientific physicians, cannot afford to overlook them, especially in such stages of syphilis as are marked by great cachexia.

16 WEST 32D STREET, NEW YORK.

ART. VII.—*Hypodermic Injections of Atropia in Certain Cases of Sunstroke.* By J. R. BARNETT, M.D., of Neenah, Wisconsin.

It is believed that while no new principle of treatment is discovered, in the clinical histories of the two cases of sunstroke recorded below, a new remedy has been suggested, which promises, from its availability and

the promptness and certainty of its action, to supply a want which most practitioners have, at one time or another, felt; viz., a cerebral and cardiac stimulant which can be administered regardless of gastric irritability—so often present in sunstroke to a degree rendering medication by the stomach impracticable—and which can compass the desired result more speedily if not more surely than the usual alcoholic stimuli.

It can only be necessary, in this connection, to advert to the fact, that, while in a certain proportion of cases of sunstroke the pathological element of apoplectic compression is the leading phenomenon, indicating prompt and active depletion, by far the larger proportion of cases display other and sometimes widely different morbid phenomena, indicating a more or less stimulating treatment. In these cases the pathological condition is that of prostration, denoted by a weak, rapid, and more or less irregular pulse, and a difficult respiration, either accelerated or retarded, and frequently superinduced by the cachexiæ following previous exhausting diseases. In these the tendency is to death by asthenia or rapid syncope; and it has been the experience of many to know, as far as falls within the reach of human knowledge, that this impending fate has been averted only by the prompt and adequate use of alcoholic stimuli. It has also been the deplorable experience of many, that in not a few cases these remedies have been unavailable because of the patient's intolerant stomach, or unavailing because of indolent gastric and intestinal absorption, or of perfect non-absorption.

There is a large class of cases in which symptoms of prostration perhaps predominate, but in which apoplectic phenomena appear sufficiently marked to create somewhat of doubt in the mind of the physician as to which line of treatment is called for—stimulation or depletion. The exhaustion, indicated by the rapid and irregular but somewhat hard pulse, calls for stimulation and support, but the accumulated masses of blood within the cerebral vessels, which have extinguished sensation and overwhelmed innervation, call as imperatively for some means of a prompt unloading. Of course, such cases are to be treated upon their own special indications, and it may be said that when these do not warrant stimulation, in the general sense, they will hardly suggest it in an expectant treatment. There is, however, a consideration which I believe will permit the use of atropia when other stimuli are contraindicated, or permissible only in small doses most carefully watched; it is the well-known influence of atropia over the vaso-motor nervous centres. Occupying a position at the head of that class of agents which contract the calibre of the bloodvessels, and at the same time a cardiac stimulant of undoubted energy, it is rationally indicated in those cases characterized by congestive compression conjoined with cardiac prostration, and practical trial confirms its appropriateness. I believe it will herein be found to be most peculiarly acceptable as an effective weapon from our medical armamentarium, covering a doubtful

ground which else must often give us sore perplexity, and exalting at once the overwhelmed sensory, motor, and vaso-motor nervous functions as can no other remedial agent, however rationally indicated.

Again, in those occasional cases characterized by an abnormally slow, weak, and irregular pulse, slow and difficult respiration, and usually marked contraction of the pupil, denoting basilar oppression, the powers of atropia become serviceable, either unaided or reinforced by other appropriate stimuli, and for the added reason that while, in these cases, there may be a sufficient degree of gastric tolerance to permit medication by the stomach, stomach absorption is usually so impeded that this medium of medication is obviously not to be trusted alone, where the imminent danger is from rapid syncope.

The powers and advantages of atropia in insolation may be thus summarized :—

1st. It is the most general excitant of the vital nervous centres available.

2d. It is available hypodermically irrespective of gastric or enteric conditions.

3d. Like other stimuli, it is indicated in by far the greater proportion of cases of sunstroke; but, further, it is permissible in many cases not amenable to other excitants.

I report the following two cases as a limited illustration, mindful of their small value from the standpoint of clinical experience alone, but trusting to the future investigations of the profession in this direction to develop what I believe to be a valuable resource in the therapeutics of insolation.

CASE I.—August Naegel, German, aged twenty, a farmer, while riding home from Neenah on the afternoon of July 25th, noted as the hottest day of the year up to that time, had proceeded but two miles, when he became so overpowered by the intense heat that he had to be taken from the wagon and carried to a farm-house, close by, for assistance. I found him half an hour afterward in the following condition: Semi-comatose; pulse about fifty, extremely weak and irregular; breathing slow and stertorous, inspiration, even at times when patient was roused to half consciousness, snoring and laboured, expiration short and puffing; head hot, pupils intensely contracted.

His attendants said that he had at first complained of great epigastric pain, accompanying intense headache. He had been given a quantity of mustard to produce emesis, together with two or three ounces of whiskey as a restorative. In spite of this last remedy the pulse was at the low ebb spoken of, although as to whether there had been any improvement in this symptom from the stimulant I could not ascertain. The patient was somewhat plethoric, but the indication obviously was to arouse the heart until the brain could be unloaded and restored to its natural functions. The whiskey already given had accomplished so little in this direction that I did not feel encouraged to try it further; accordingly I injected hypodermically $\frac{1}{50}$ th of a grain of atropia with $\frac{1}{100}$ th grain of the sulphate of morphia, assiduously plied cold affusions to the head, and awaited the re-

sult. Within five minutes the pulse numbered sixty-eight, and was full and soft, and at the end of fifteen minutes the pupil had dilated to rather more than its natural diameter. The change in the character of the breathing was equally marked. The stertor subsided, except at long intervals. The patient got up, talked with tolerable coherence, and asked to go home. Most of the foregoing symptoms, though less in degree, returned about half an hour afterwards, apparently the result of injudicious exercise and excitement, but rest, and a few drops of the tincture of digitalis rallied the patient, and at the end of an hour from the time I arrived I considered it safe to leave him for the night. He made a full recovery without any subsequent alarming symptoms, resuming active farm work a few days afterward.

Remarks.—The promptness of this relief from a condition that could only be regarded as critical, surpassed anything of the kind that I had previously witnessed, and it did not fail to impress the bystanders with the abundant resources of medicine. The case undoubtedly might have recovered under a slower stimulation, but this admission in no wise weakens the contrast between the effectiveness of the two. Alcoholic stimulation had failed to accomplish in half an hour what the atropia wrought in ten minutes. The possibility of rapid recovery from these conditions, irrespective of treatment, is remembered; but to suppose the recorded effects in the present instance—all symptoms of cerebral oppression disappearing, *pari passu* with the progressive change in the iris—to be a mere coincidence, is to struggle for a remote conclusion when an easier one is right at hand.

The part played by the fractional dose of morphia was, as anticipated, simply that of a cardiac stimulant. It did not seem to modify the influence of the atropia upon the vaso-motor nervous centres in the least.

CASE II.—Simon Nelson, a Dane, æt. 40, labouring in a lumber yard, was prostrated by the excessive heat of Aug. 12th. But little could be learned of first symptoms of attack, other than that he complained of faintness and nausea. After a severe attack of vomiting he started alone for home, half a mile away. When within a few rods of his house he fell down insensible, where he was immediately found by the neighbours and carried into the shade. Visiting a patient near by at the time, I was summoned, and reached the spot within a few minutes. I found him in profound coma. His clothing was covered by ejecta vomited just before. Breathing was stertorous and very laboured; head and skin intensely hot; pupils contracted to a mere point; pulse 156, small and somewhat cordy. There was complete anæsthesia, no reflex movements following pinching of the skin or eyelids, or even rubbing of eyeball. Conjunctiva injected, but whether an effect of the sunstroke or not I could not judge. I resorted to cold affusions to the head and sponging of the body immediately. The pulse rapidly weakened, and in a few minutes I attempted to give whiskey. This proved to be impracticable, as suffocation seemed imminent upon placing any fluid in his mouth. Concluding to give atropia, but not having it with me, I returned for it to my office, being absent ten minutes. Meantime every symptom grew worse. At 3 o'clock I injected subcutaneously a solution containing $\frac{1}{40}$ grain of the muriate of atropia. Five minutes

afterwards the pulse had fallen to 144. At 3.10 it was 136. Ten minutes afterward it had risen to 180, but remained of about the same force. Breathing was much less laboured; anæsthesia still complete; pupil commencing to dilate. Heat of head and surface had been much lessened by the cold applications, which had been kept up continuously. I may as well remark that these applications were continued until 5 o'clock. For half an hour the pulse did not materially change. Breathing still improved. At 4 the pulse notably weakened, and following that hour until 4.40 it was at times so rapid and irregular that it could not be accurately counted. During this time efforts to administer whiskey failed as before. Breathing became again extremely difficult, being obstructed by the tongue falling back over the larynx. Patient had to be held on the side to permit adequate respiration. Another vomiting fit occurring, nearly suffocated him, suspending breathing until the countenance became cyanotic. This ominous hue persisting, and death being imminent, I again injected atropia gr. $\frac{1}{80}$. The effect upon the pulse was magical. Within ten minutes it fell from the condition I have spoken of to 152, with more force than it had hitherto exhibited. Other symptoms of marked improvement accompanied. Slight motions of the hands and feet were observed; the dorsal decubitus permitted proper respiration, and the patient occasionally moaned, as if in pain. The eyes, however, remained fixed and insensible, the pupil dilated slightly above its normal size. At 4.55 there appeared a slight weakening of the pulse, the rate remaining the same. At 5 o'clock I injected hypodermically 5ss of whiskey. Found the anæsthesia had been so far removed that patient tried to escape the needle of the syringe, and the irritation of the whiskey drew from him frequent moans, as of pain. Pulse recovered under this and fell to 144. At 5.10 I injected same amount of whiskey, the pulse falling to 132; at 5.20 another similar quantity; at 5.30 still another, pulse 120. The introduction of the needle always gave rise to great uneasiness, moaning, and an apparently voluntary effort to avoid it. The same followed brisk frictions of the hands and feet with whiskey, instituted to restore warmth and capillary circulation. Patient was now conveyed to his house and placed in bed, and as there was a steady improvement in all his symptoms, no further hypodermic injections were administered until 6 o'clock, when 5ss of whiskey was again given. At 7 the pulse was 120, tolerably full; breathing regular and comparatively easy, and temperature normal to the touch. Patient was still unconscious, but, as I was obliged to go into the country, I did not hesitate to leave him for a few hours. Returning at 9.30 I found the pulse still at 120, but strong and becoming hard. Heat of head and skin rather excessive, consequently the cold applications were resumed. The bromide of potassium was also ordered to be given in five grain doses every two hours. There was no notable change in the cerebral symptoms, although I fancied an effort on the part of the patient to follow my movements as I was occupied about his bed. At 10 o'clock I left him, instructing the nurses to call me should any worse symptoms arise, but feeling that the chances for and against him preponderated on the side of recovery. I learned early the next morning, while on my way to visit him, of his death at 5 o'clock, following a severe vomiting fit and hemorrhage from the stomach. The amount of blood lost must have been excessive, as it was said to have saturated his clothing and run across the floor.

Remarks.—A predisposing cause of this attack, and one which undoubtedly determined largely its phenomena, was the cachectic condition

which the patient was in, the sequence of an eight weeks' run of typhoid fever, from which he had scarcely convalesced.

In estimating the part played by the atropia in the treatment of this case, I trust will be borne in mind the extreme difficulty, nay, the impossibility of conveying, in a clinical history, a just conception of those manifold changes in symptoms resulting from either the remedial means employed, or from the varying progress of the attack. They were such as have to be witnessed to be fully appreciated. The rapid, weak, and rapidly weakening pulse; the laboured and choking respiration; the cyanotic countenance; the almost obliterated pupil, and the total anæsthesia, all betokened an overwhelming collapse of sensory, motor, and vaso-motor innervation, under which it momentarily seemed that the patient must succumb. The temporary relief from this truly desperate condition following the atropia injection was so prompt as to claim the undeniable relation of effect to cause. The effects of the second injection were still more marked, appearing wonderful to all who witnessed them. To me they were so striking that I can but deplore my poverty of language to adequately portray them. The question will naturally be asked, why, after observing the prompt benefit following the first injection, was not another resorted to before the patient's pulse was permitted to sink to the low ebb described? Frankly, without the guide of sufficient previous experience, I was afraid to repeat what I could not fully persuade myself might not be as potent for harm in its secondary effects, as it had been active for good in its primary. Again, it may be asked, why distrust the atropia, after the second unmistakable exhibition of its powers, and resort to whiskey? Every cautious physician will understand and respect my reluctance to use so potent an instrument when a safer one might be made to answer in its place. Had the whiskey failed to sustain well the effect of the atropia, I should have used the latter, in minute quantities, as long and as frequently as necessary. I believe now that had I, at first, injected, in place of the single larger quantity, $\frac{1}{70}$ to $\frac{1}{60}$ of a grain every twenty minutes, for a time, I could have sustained the improved cardiac impulse throughout.

Respecting the final fatal termination, it may be said to have been an accident essentially independent of the characteristic morbid phenomena of the affection, an added lesion which could not have been anticipated nor prevented. A return of the vomiting while the patient's condition was otherwise promising, undoubtedly led to the laceration of some gastric vessel, the hemorrhage proving almost immediately fatal. Such an accident could no more detract from the results of the previous treatment than could an accidental shooting or a stroke of lightning. But for this complication a recovery might have been reasonably expected.

ART. VIII.—*Cases of Splenic Leukæmia, and their Treatment with Hypodermic Injections of Ergotine; with Remarks on the Hypodermic Use of Ergot and of Iodine in Glandular Enlargements.* By J. M. DA COSTA, M.D., Professor of Practice of Medicine in the Jefferson Medical College, Philadelphia; Physician to the Pennsylvania Hospital.

I PURPOSE in this paper to place on record some cases of splenic leukæmia, and especially to comment on the treatment employed. But let the cases speak for themselves.

CASE I. Emma S., 25 years of age, single, was admitted into the Pennsylvania Hospital on the 16th of March, 1874, and sent to my ward. A sickly looking, pale creature, of inordinate appetite, yet constantly wasting, she was brought to the hospital to be treated for what the family conclave had determined to be a tapeworm. Partly from some relatives who accompanied her, partly from herself, we learned that she had not for years been in strong health. Her menstruation began at the age of sixteen, and had never been regular, the intervals at times being as long as six months, and the discharge nearly always scanty. Her last monthly sickness, occurring not long since, and also happening after six months' intermission, was, however, exceptionally profuse. Much of her debility was attributed to an attack of "slow fever," presumably typhoid, which she had at the age of thirteen.

Yet, notwithstanding her delicate health, she was not regarded as being really ill until early in the spring of 1873, when she began to complain often of a heavy pressure on the top of the head and the upper portion of the spine, and when the inordinate appetite already alluded to began to attract attention. She was not actually hungry, nor did food taste well to her; but she was never satisfied. A dozen oranges at a time served but as a prelude to the consumption of enormous quantities of bread, and meat, and apples, and, in truth, of anything that was placed before her. But she rather lost than gained flesh, nor did her blood seem to improve, for ecchymotic spots were seen at various parts of the body—a reappearance rather than an appearance—for two years ago they had for a short time been noticed on the thighs and pelvis. Excepting obstinate constipation and dark offensive stools, there were none of the usual symptoms of digestive disorder until in August, when nausea and vomiting of starch-like matter occurred. About a month before she became conscious of a weight in the left side, and of a heavy mass which seemed to move about as she walked. During the past winter she was troubled with a severe cough, and she became very irritable; in some of her cross moods tearing everything she could get hold of, even her own clothing.

Several notes, taken shortly after her admission to the hospital, speak of her peculiar sallow and unhealthy aspect, of the anæmic looking gums and tongue, of the ecchymotic spots on the thigh, to the touch kernel-like under the skin, of her great debility and ravenous appetite. The temperature was rather low, a common record being 98° in the morning, with a pulse of 96, and respiration 24, and the same or a rise of half a degree in the evening, with sometimes a decrease in the pulse of ten beats; while 97° is also mentioned as the result of the morning observation. The urine was of specific gravity of 1020; on standing, an abundant deposit

formed, consisting of amorphous urates and a few epithelial cells. The stools were mostly dark and hard; some, however, of mushy consistence, and contained a few particles of undigested food. The tongue was generally slightly coated with a moist, whitish fur. There were no special thoracic symptoms; the first sound of the heart was shorter than normal.

The chief signs of disease were found in the abdominal cavity. The large and flaccid abdomen was, as regards percussion, divided longitudinally into two almost equal parts, one everywhere dull, the other yielding a ringing tympanitic sound. Ascertained with accuracy, the line of decided dullness was found to begin in the sixth interspace anteriorly, and to extend into the axilla, curving then backwards and downwards; everywhere on the left side the dullness was marked, until on a line with the crest of the ilium it gave way to a tympanitic sound. In front the dullness extended to the median line, and on a level with the umbilicus crossed for two inches to the right. But a little lower down it passed back again to the left; on a level with the centre of the tumour the dullness did not go decidedly beyond the line of the axilla, where the sound became tympanitic. In truth, it was evident that the enlarged spleen, for such the swelling was recognized to be, was displaced, and occupied a slanting position. On palpation, its rounded edges could be felt, a notch be made out, and the organ be moved without occasioning pain or exhibiting tenderness, unless it were very much pressed out of the position it occupied, when pain was complained of. No increased percussion dullness in the hepatic region was discernible.

From no belief in the existence of a tapeworm, but partly to satisfy the patient's mind, partly also to see if brisk purgation would influence the extraordinary appetite and the digestive symptoms, she was placed on turpentine, followed by a few doses of male fern, and active cathartics. These remedies acted with difficulty on the sluggish bowels, but failed so utterly in yielding the least evidence of a parasite that even the patient became convinced. It was, in truth, very obvious that the tumour was the cause of the malady, and this was diagnosticated before the clinical class at the hospital to be a non-malignant tumour of the spleen, of the nature of a general hypertrophy of the organ. The opinion advanced suggested, of course, a careful search for enlarged glands and swollen lymphatics all over the body, as well as an accurate examination of the blood. As regards the former inquiry, it gave negative results; the examination of the blood showed us, however, that we were dealing with a very remarkable case of splenic leukæmia. I subjoin the careful report of our microscopist, Dr. Jos. G. Richardson:—

On examining a drop of fresh blood drawn about fifteen minutes after dinner from the patient, with enormously enlarged spleen, in the south ward of the Pennsylvania Hospital, I found the number of white blood-corpuscles much increased, and, to determine the relative amount of this increment, I resorted to the method (in part) of Vierordt and Welcker.

A small drop of blood, drawn by a needle puncture from the ball of the woman's middle finger, was received upon a slide, and then with the side of the needle gently spread out upon the glass so thinly as to afford portions where the film was of such tenuity as to consist of only a single layer of corpuscles, which almost immediately dried *in situ* upon the glass. The specimen thus prepared was then arranged beneath the microscope, in the field of a $\frac{1}{4}$ inch objective, and after replacing the ordinary *eye piece* by one containing a cob-web micrometer, with its threads adjusted so as to include a band $\frac{1}{1000}$ of an inch wide, across the field of view, I proceeded to count the red and white cells, comprised within this space, at five different places upon the slide.

The enumeration resulted as follows :—

Observation	1st	Red corpuscles	68	Leucocytes	60
"	2d	"	"	"	59
"	3d	"	"	"	34
"	4th	"	"	"	53
"	5th	"	"	"	54
Total			529		260

I therefore conclude, that the case is one of very marked leucocythemia, in which the white blood-corpuscles bear to the red disks a proportion of about 1 : 2 instead of 1 : 357, the ratio asserted by Moleschott to exist in normal blood.

Here then we had a case of pure splenic leukæmia with extraordinary alteration of the blood ; and the question arose, could we, while attempting to improve the character of the blood, do anything to reduce the enormous enlargement of the spleen ? Iron, nitromuriatic acid, quinia, pepsin, carefully regulated food, seemed to have but little effect in fulfilling either indication, though there was a slight increase in general strength. Reflecting over the matter, I determined to try ergot hypodermically, and with this view began, March 24th, to inject from five to ten grains of ergotin into the abdominal covering chiefly, though also into the arms, very nearly every second day. The exact formula, and the one which was found to be the best suited, was forty grains of ergotine carefully mixed with thirty minims of glycerine, and enough distilled water added to make one hundred and twenty minims ; fifteen minims of this would represent five grains, and was the average dose employed, though it was subsequently increased to twenty-five and thirty minims. By April 7th, the most marked diminution had taken place in the size of the tumour, but, as the arms were beginning to be sore from the repeated punctures, the injections were only made into the abdominal walls. As internal treatment she took for a time still nitromuriatic acid, varied by the administration of metallic iron.

By the 11th of the month the splenic tumour was so far reduced that it measured a full inch less in all directions, and the abdomen was less in circumference by several inches. But the patient began to complain of the pain of the injections, and had not gained in strength. The ergotine was now discontinued, and shortly afterwards a quarter of a grain of iodine, dissolved in twelve minims of glycerine and water, was employed hypodermically for five or six days, a further, though not so striking, reduction of the tumour taking place. Yet there was no improvement in her general condition ; indeed, she spoke of being fainter, having pain in her head, her hearing had become much impaired, her eyesight was dimmed, and, though the extraordinary appetite remained, she was becoming thinner and paler day by day. Severe pain and tenderness on the left side of the abdomen were complained of, and these signs of a local peritonitis, which showed themselves for about eleven days before death, were preceded by a rise of temperature to 99° and then to 100°, the pulse being 82, at which both remained until very near to the fatal termination. All treatment, excepting the use of blisters and morphia, chiefly hypodermically, had been abandoned, and even with this it was difficult to control the severe pain, which she often likened to a feeling as if she would burst. She died on the 30th of April, completely exhausted.

Here is the record of the *post-mortem examination* made by our hospital pathologist, Dr. Morris Longstreth, twenty-four hours after death : Body

extremely emaciated; no enlarged lymphatic glands to be found on any part of the surface of the body. Abdomen uniformly distended, firm and doughy under pressure, and not tympanitic. Rigor mortis firmly established. The abdomen was opened first. The subcutaneous fat had disappeared from the cellular tissue—the muscular walls were quite thin. Parietal peritoneum adherent to the omentum—especially marked on the left side. Sac of the peritoneum filled with blood, not clotted, and of a chocolate colour. *Spleen* reached across the abdomen somewhat to the right of the median line, and downwards about to the umbilicus. It also pressed up the diaphragm, the upper end reaching to the level of the third interspace, just above the left nipple. The organ was found inclosed in a loosish capsule of inflammatory lymph, which was traversed by numerous venous trunks about the size of a crow's quill. Its surface was somewhat roughened with inflammatory bands of lymph. Spleen measured in length $13\frac{1}{2}$ inches, in breadth $6\frac{1}{2}$ inches, in thickness 4 inches, weight 4 pounds 14 ounces avoirdupois. The vessels entering the hilus were very divergent and considerably enlarged. Tissue of the organ quite firm, trabeculæ thickened and prominent—the intratrabecular portions of the same colour as the blood found in the abdominal cavity. A little fluid blood escaped on section. *Stomach* distended with gas, it contained a small amount of fluid. Its mucous membrane normal in appearance, only slight evidences of post-mortem change of its surface being present. *Liver* increased in size, though not markedly so in its general aspect; outline regular; borders sharp; right lobe was rather prominent and thickened in the centre, taking the form commonly seen in compressed waists. On section, its tissue appeared uniform and normal, though congested and of a colour approaching that of the blood. Under surface covered with long shaggy bands of lymph which bound it to the omentum; upper surface smooth and not adherent to the diaphragm. Its weight was 6 pounds 14 ounces avoirdupois. *Gall-bladder* contained considerable green-coloured bile. *Kidneys* slightly enlarged; outline regular; capsule somewhat thickened and opaque, but not too adherent; the surface of the organ after the removal was smooth. On section, the cortical portion was found relatively enlarged. Their combined weight was 12 ounces. *Supra-renal capsules* healthy. *Omentum* greatly thickened, and adherent to the parietes of the abdomen, as well as to the liver, slightly to the intestines, and very firmly around the spleen. The substance of its mass was traversed by numerous large vessels—some of them larger than a goose's quill—and by an innumerable number of small vessels. The blood in the abdominal cavity had its origin apparently from the rupture of some of these vessels, although the exact seat of the hemorrhage could not be determined. *Intestines* somewhat matted together by lymph, but this was neither general nor marked, and seemed of recent date. Their adhesion to the omentum was of the same character and extent. Glands of the *mesentery* normal. *Reproductive system* apparently in a healthy condition. *Thorax*—*Pericardium* contained a small amount of fluid; the sac appeared in every respect normal. *Heart* of normal size; its weight, after being emptied of blood, 10 ounces avoirdupois; its cavities were distended with soft clots, without firmness and of a chocolate colour. The clots were continued into the great vessels and retained the same characters in those situations. When removed and placed on a plate, the blood-masses did not become diffuent, but flattened out, still preserving the smooth surface as moulded against the walls of the cavities and the vessels. *Valves* and the texture of the *muscular*

walls appeared normal. *Pleural sacs and lungs* normal; hypostatic congestion not marked, and its colour partook of the chocolate tinge. *Left lung* considerably compressed by the upward protrusion of the spleen, and its lower border for about two inches in extent exhibited a condition of atelectasis from pressure (collapse). *Internal glandular system* wholly free from any enlargement and apparently normal. *Blood* throughout the body of a pretty uniform chocolate colour; no firm clots were to be found, certainly no trace of anything approaching a fibrinous mass. Under the *microscope*, the number of white corpuscles was seen to be enormously increased; the average of numerous specimens in which an actual count was made, showed the proportion of the white to the red corpuscles to be about as 2:3. *Muscular fibre of the heart* under the microscope, exhibited perfectly normal characteristics. Sections of the *liver* under the microscope showed doubtful appearances of what is described as "leukæmic swelling." The condition was not marked and was difficult of demonstration in any degree. There were no traces of a similar condition in the *kidneys*. The microscopic examination of the *spleen* showed a condition of *hypertrophy of all its elements*, as noted in its general description above. It was extremely difficult to make a satisfactory section even after hardening—the soft pulp escaping under pressure of the knife. No examination was made of the brain.

In reviewing the marked features of this striking case, attention is forcibly arrested by several points. In the proportion of the white to the red globules, it is one of the most remarkable on record; and the absence of any other glandular enlargement stamps it as one of the purest instances of splenic leukæmia. The temperature record is normal or but little altered, and for the most part below the healthy standard, excepting during the last thirteen days, when it rose to 99 and 100°, synchronously with the severe abdominal pain, due, I believe, to the peritonitis. But the rise may have been owing to the disease. In the second case to be reported the temperature was higher than normal, and in the only other observation that I can find anywhere on the temperature of leukæmia, that by Uhle, a steady increase of one to one and a half degrees was noticed during the latter weeks of life. It is thus a question whether the changed animal heat is due to the malady or to some complication. In the anæmia, the exhaustion, the quickened respiration, the wasting, the case presents nothing different from the usual course; but on the other hand the deafness, and the extraordinary appetite with progressive emaciation, suggest numerous interesting physiological and clinical inquiries. What became of all the food? The appearance of the stools showed, for the most part, that it was digested, yet it did not become converted into healthy blood, and the tissues continued to starve and to waste.

But to me the most interesting part was the evident reduction of the spleen by hypodermic injections. Those of iodine had some effect; but as they were tried about the beginning of the severe abdominal pain, and not long persevered in, I shall not dwell on their effect. Those of ergotine were, unquestionably, decided in their action; the splenic dulness on per-

cussion, and the outlines by palpation—the skin being stained with nitrate of silver so as to preserve careful measurements—clearly proved this. True, the injections were attended with some inconvenience, and did not save the patient, because the blood had been already too profoundly altered, yet sufficient result was produced to show that earlier employed the chances of their acting favourably would have been very great. In a few well-observed cases which, Niemeyer tells us, throw a very clear light on the dependence of the dyscrasia on the disease of the spleen and lymphatic glands, it was found that the enlargement of the spleen and glands existed for months and years before the disorder of the blood manifested itself. Now it is here, I thought on reflecting over the results obtained in my patient, that the treatment employed would be likely to prove valuable. And I was able, not long since, to witness the good effects in a case which presented itself at the Jefferson Medical College Clinic.

Briefly told, it is this :—

CASE II. Michael C., age 32, shoemaker, came to the clinic, October 12th, complaining of pain and a lump in the left side, both of fifteen months' duration. He looked pale, anæmic, and dejected. The tongue was slightly coated; there were symptoms of indigestion, and he was subject to frequent attacks of diarrhœa, alternating with constipation. The pain was only occasional in its appearance, and was described as not so much a pain as a dull feeling and a weight.

An examination of the thoracic and abdominal regions showed some prominence of the chest, on the left side, in its lower portion. The lungs were normal. Considerable beating of the heart was visible, but no murmur was heard, nor was there an increase in the extent of cardiac dulness; the first sound was a little more forcible than usual. Percussion of the splenic region gave a dulness extending from a point in the sixth intercostal space, two inches below the nipple, in a line with the front margin of the axilla, to a distance somewhat below the ribs—in all, a vertical diameter of six inches.

There was no enlargement of the liver, no dropsy, no lymphatic swellings. The patient suffered, besides the feeling of weight, with palpitation of the heart upon excitement, an occasional cough, and some oppression in breathing. The respirations were 20, the pulse was 72. An examination of the urine for sugar and albumen gave negative results. The microscopical examination of the blood showed in two yields, respectively, eighteen and twenty white corpuscles, in comparison with twelve and fourteen, respectively, of normal blood.

Careful inquiry into the patient's history was made; he, himself, attributed his trouble to overwork; he had never had a malarial attack.

A diagnosis of splenic enlargement with beginning leukæmia was evident, and led to the following treatment being directed: A hypodermic injection, on alternate days, of ergotine gr. v, in glycerine and water; also internally tinct. of chloride of iron xx drops thrice daily.

The first injection was of one grain of ergotine, but the subsequent applications were of the strength prescribed above. The first two injections were made over the splenic region, the third injection and all the other ones were into the subcutaneous tissue of the left arm. On October 16th, after two injections had been made, the patient said that he felt

better; and the splenic diameters were found to be less. An observation on the 20th, after five injections, records that the pupils are not dilated by ergotine, that there are no ulcers at former points of insertion, but, in each case, a trifling circumscribed slough of the skin. The temperature before the injection was 100.3° ; after, the same. The temperature on several occasions showed a slight rise after the injection, but not of more than half a degree. October 21st, after six injections, the patient enthusiastically volunteered the information, that he felt splendidly, and the size of the spleen was observed to have much diminished. October 22d, after seven injections, the spleen was percussed, and found not extending to the lower rim of the ribs; very marked improvement in the patient's appearance was manifest, and he said that he had not felt so well for a year. October 29th, after eight injections, the colour of the face, lips, and tongue was almost normal; the appetite had greatly improved; the pain in the left side was gone. A microscopical examination of the blood, made by the first clinical assistant, Dr. James Wilson, showed the relative number of the white corpuscles to have become nearly normal, being 14 in the patient's case as compared with 12 in the blood of a perfectly healthy person. Percussion of spleen gave a dulness of only $3\frac{3}{4}$ inches in the vertical diameter; the transverse diameter beginning on a line with the middle of the axilla. The temperature was normal. The patient was now dismissed as cured after being enjoined to continue the use of the iron.

I shall not comment any further on the features of this case than to call attention to the success of the treatment employed. That it would prove of much use in cases of large new formations in glands, malignant or non-malignant, I do not believe. But the majority of instances of glandular enlargement consist rather of a hypertrophy with considerable vascular increase, and here the treatment proposed is likely to do good. Nor is its application to be limited to cases of splenic disorder. As regards iodine, there is no reason why we should not try it in many instances of tissue change in organs, or their increase, for which iodine is indicated. I have so employed it, and have not found, keeping to the formula suggested, the least local trouble from its use. The patients sometimes speak of tasting the drug, and exhibit a passing swelling of the feet, which is not connected with albuminous urine. This was especially noticed in a case of most extensive goitre now under my observation, in which three hypodermic injections of iodine reduced the swelling in the neck half an inch in circumference. But as it is more my purpose here to speak of the hypodermic use of ergot, I must add that in the same case, three further injections of ergotine produced a like result of diminution, which is still going on under the treatment employed. And, on the whole, I think that this therapeutic plan is deserving of a careful trial in a number of cases of splenic and other glandular enlargements and alterations, for which our treatment hitherto has proved unsuccessful or of doubtful efficacy.

ART. IX.—*Case of Fibroma Molluscum, with Remarks upon this Rare Disease.* By MIDDLETON MICHEL, M.D., Professor of Physiology and Histology in the Medical College of the State of South Carolina, Charleston.

OUR archives present a limited record of this very rare disease, conflicting and discordant histories of which, under one and the same name, have produced unqualified disappointment in the mind of the student.

A writer of eminence declares that two very distinct diseases have been thus confounded; but with more propriety, it may be said that descriptions, drawn solely from outward appearances, without histological identity or dissimilarity, lead to classifications so varied and confused that individual cases might be arranged in any order within the nosography of the dermatologist, from that which includes an insensible wart, or an acne molluscoides of Caillault, to an albuminous sarcoma of Kiernan. But, if we look to histology as one of the truest interpretations in a philosophical classification of skin diseases, molluscum simplex or fibroma must be placed with certain propriety among the hypertrophies, and in any part of its course will be recognized as originating in a real local thickening of the corium, with such ulterior changes in the derma, independent of inflammation, as are connected with slow progress in the disease.

With this anomaly, affecting simply the thickness or density of limited and circumscribed parts of the skin, with no constitutional disturbance, certainly not contagious, and with marked change in the contexture of its cellular and adipose elements, I first became acquainted while in Paris, where I learned to regard this pathological condition as constituting a disease called *molluscum simplex*. It was exhibited to me under the form of numerous and various sized tumours, nodules, or *tubera* of thickened derm, some of which were of the size of a pea, the largest, perhaps, of the dimension of a hazel-nut; they were round or oval, very prominent, irregular, sessile, or pedunculate; skin at first not discoloured, changing gradually to a light brown, or bronze, or brownish-yellow hue; very solid, even hard, except in situations in which an attenuated corium had first reddened, then desquamated, then exuded an ill-defined product, which hardened into a scab, from beneath which slight ichor sometimes escaped.

Another condition of things I had occasion to see in this city some twenty years ago in a negro, who presented molluscoid, viscid, and gelatinous growths, scattered over nearly all parts of the body, particularly the face, which disease, however, had not affected the health, though the removal and reappearance of a succession of these tumours under a surgeon's knife had somewhat enfeebled him. This case infected no one, for I myself examined him often, and so did several of my colleagues, yet, seated in the sebaceous glands, I presume this must have been the form or variety

of the disease spoken of as contagious—molluscum contagiosum—by many, though denied by others as communicable in any way, even by inoculation. But the form of disease above referred to, as studied by myself in Europe, I never again met with until last winter, when, through the complacency of my friend, Dr. J. Sommers Buist, in charge of the Roper Hospital, my attention was called to a patient with what I recognized to be *fibroma molluscum*, a disease so rare at best, even in America where some varieties of these affections are said to be more common than in Europe, that the history of the case, which I am permitted to furnish, will scarcely fail to interest those conversant with this obscure department of pathology.

H. Rawley, a native of New York, a sailor by profession, is about twenty-eight years old, of firm and healthy frame, with no constitutional defect that can be discerned; has never had syphilis, exhibits no trace of such a disease, but enters the hospital in consequence of a singular cutaneous affection which has not injured his health, and is painless except upon pressure in certain positions. His own account is, that in 1871, while in France, at St. Nazaire, on the Loire, there appeared, during the summer, the first of these tumours, which now cover all parts of the body, limbs, neck, and face. The first tumour, about the size of a pea, appeared on the inner and upper part of the left arm; the next followed very soon after, and made its appearance at the temporal border of the right eyebrow; then another soon occupied the right tibia, when they began to appear in rapid succession upon all parts of the limbs, face, and neck—the body not being particularly invaded at that time. He states that the eruption of these tumours was unaccompanied by any constitutional irritation, having had no fever at any time since its invasion. When the first tumour was seen upon his arm, he tells me it was removed in France, but reappeared; then, in about a twelvemonth, it dried up and fell off. On examining the cicatricial surface I find an indurated and discoloured pit, evidence of the former existence of one of these growths, which I may say is the state of the skin wherever any of these developments, having reached maturity, has passed away: *i. e.*, a hard, pitted, or umbilicated cicatrix, of a dirty, dark-brown pigmentation, with a desquamating cuticle, furfuraceous when attacked by the finger nail, so that, from this well-defined maculation, it was still possible to count all of those tubercles which at any time may have existed.

After his arrival at the Roper Hospital, I understand Dr. Buist removed one of these tubera from the left elbow about the size of a large buckshot; and subsequently another from the leg, which he included in a ligature, as it had reached, in its progressive metamorphosis, a fungoid or mushroom-like development of the size of a small plum, which bled whenever touched or injured in any way, though never spontaneously.

The fungoid appearance of this tubercle upon the tibia, which was present when he entered the hospital, presented great interest to my mind, for though I could perfectly understand the possibility of a small mass of hypertrophied tissue degenerating into a fungoid growth, just as larger tumours sometimes become gangrenous in their most depending parts; yet, as no mention seemed made of this mode of termination of fibroma in any of the best treatises on the subject, I was a little embarrassed to account

for the singular aspect which this isolated tubercle presented upon the tibia, more especially as the patient informed me that just such another one had occurred previously upon the back of his neck, which also dried up and fell off. But since writing out these notes, the very able review of the last edition of Tilbury Fox's work has come to hand, in which it is said Dr. Fox has recently met instances of precisely the same kind, which he describes as *fibroma fungoides*, the first examples of the sort he has ever seen. The reviewer says: "Under the name of Fibroma Fungoides, Dr. Fox describes a form of fibroma of which he has seen four examples. It differs from fibroma molluscum in that it has a tendency to ulcerate, showing at the same time great vascularity. A remarkable wood-cut accompanies one of the cases which certainly represents a very curious form of disease."¹

These tubercles, scattered sparsely over the surface, were sufficient in number to attract our attention and induce us to count them, though we only met with forty of them, of a round, sometimes oval shape; in consistency hard, almost fibroid; about the size of a small marble, apparently fixed in the derma, projecting above the surface as though a ball was beneath the skin. The integument over most of these tubera was, at first, not in the slightest degree discoloured, and was perfectly smooth; over none was it rugged or tuberos. The more advanced growths assumed a dark brown colour, sometimes ulcerating as that did upon the tibia, and became fungoid, exuding a glairy and gelatinous fluid, but most of them drying up and desquamating. Though nearly all of these tumours were attached by a broad base, others were pedunculated; one, in particular, on the neck was so curiously elongated and pointed as to grow out in resemblance of the tail of a mouse.

Some of these molluscum disappeared of themselves, and the button-like depressions scabbing over, left an insensible spot in the seat of every former tumour, for he is unconscious of the impression of a pin in these situations.

The history of all these tubercles has been their development from a small nodule within the derm, not at all connected with a sebaceous follicle, which grows from the small size of an ordinary pimple to that of a large boil; matures and then withers, in the large majority of instances not ulcerating; thus appearing, disappearing, and reappearing in successive numbers.

The disease really appeared to originate entirely within the derma, the epidermis only subsequently participating as the natural consequence of the change wrought within the corium. I could detect no atheromatous formation in any of them, nor could I discern, as already intimated, that a sebaceous follicle was implicated in this origin, though at times, according to his statement, he had expressed a vermiform product from some of the more advanced, soft, and elastic tubercles, which circumstance, associated with the occurrence of a case of *Dracunculus* in the hospital wards at the time, made some of the assistants suppose that he might be suffering from a similar disease.

The circumstances most conspicuous in the progress of this case, and, therefore, most important in determining the particular variety of the disease, were, the succession and size of the *tubera*; their spontaneous resolution, seeming often to wither away of themselves; the sessile implanta-

¹ Am. Journ. Med. Sci., Oct. 1873, p. 472.

tion of most of them, though two presented a pedunculate shape. The rapid evolution of and want of permanency in these growths, their resolution without any morbid product being visibly eliminated, and their sessile and pedunculated condition, constitute more especially the features of that form or variety of disease which has received the varied appellations of *Molluscum simplex*, *Fibroma molluscum*, *Ecphyma mollusciforme*: adopting the term ecphyma from Mason Good, who first applied it to similar hyperplastic transformations of the derm—best known to us as warts, corns, etc.

My attention was particularly attracted to the elongated shape of the tubercle upon the neck, not because of its resemblance to the tail of a monse, but because of the exaggerated tendency it exhibited to assume the pedunculous character, so often associated with a chronic development of molluscum that Willan thought fit to term a variety of hyperplasia of the corium, *molluscum pendulum*. Though the pendulous growths of which we shall presently speak have been described as an entirely different affection from these simple wart-like excrescences constituting fibroma molluscum, yet as pertaining to the common class of dermal hypertrophies, there seems to be a certain connection or relationship far more intimate than is *classically* admitted. There can be little difficulty in recognizing the true seat of the malady I am describing. The morbid change I witnessed from its inception as a minute nodule of hardened derm, just beneath the surface, and only discoverable by the touch, not as yet prominent above the surface, in no respect affecting either the colour or vascularity of the part, therefore only detected when the hand was made to pass over the surface—a discovery often made only through the assistance of the patient, who, being aware of its presence, would call attention to the developing tubercle. Whether this change begins directly in the corium, where it seems to begin, or in the panniculus adiposus, as Virchow thinks, I am not willing to speculate upon, as I never possessed the opportunity of examining this point microscopically. Neumann, however, furnishes us with a figured representation of its heteroplastic nature.

Such a tumour, he says, consists of—

“Young gelatinous connective tissue (Fig. 41), which forms large interstices, containing a yellowish, expressible, albuminous fluid, and traversed by a delicate fibrinous network. Virchow concludes that the deeper tumours take their origin in the panniculus adiposus, while others are developed in the corium. Within the areolæ we find, also, numerous cells (Virchow's granulation tissue).”¹

From the drawing which he gives, the cutis is seen filled with cells. This proliferation extends everywhere throughout the tissue; the sebaceous glands would appear to be almost pressed out of place by this histogenetic multiplication; there is no change of structure at any rate

¹ Neumann's Handbook of Skin Diseases, trans. by Bulkley, p. 373. 1872.

in these sebaceous glands, such as is well known to exist in the disease reputed to be contagious (*molluscum contagiosum*). Here, on the contrary, a hyperplastic rather than a hypertrophic formation takes place, perfectly independent of the glandular elements of the derm. Where this plastic product is developed rapidly, as in Rawley's case, I can understand that the individual life of the cell soon expires or degenerates, which explains why some of these tubera disappear, others become fungoid, while none grow to any great size; but, on the contrary, where this increment of tissue is of slower growth, with its surroundings—nervous, vascular, and lymphatic—gradually adapting themselves to a veritable hypernutrition in the part, there is nothing which opposes an indefinite, an unlimited development of tissue, which may attain dimensions perfectly colossal.

The transition then from limited to unlimited hyperplasia would seem to justify the opinion above expressed: that a more intimate connection exists between circumscribed changes in the derm, and those which invade yet more extensive tracts—in other words—between fibroma on the one hand, and dermatolytic and pachydermic alterations on the other. This is not a speculation merely based upon orthodox pathology, but appears to be corroborated by a reference to the recorded instances in the archives of our science, which, few and scattered though they be, are the more curious and reliable, being authentic as well as genuine descriptions of clinical observations, at a time when the mind was neither trammelled with artificial classifications nor confined within provisional conceptions of disease.

From such early and simple records, I learn, that one and both of these forms of hypertrophies may exist separately or conjointly in the same individual; the lesser growth, perhaps, but ill understood when presented alone; while again they were wholly unobserved when the mind was lost in wonderment at the preternatural bulk of some gigantic tumour.

The vague and uncertain descriptions of undoubted cases of molluscum fibroma, and the presence again of just such tubercles, accompanying accounts of vast dermic growths, in almost every instance which I have found in print, bear attestation to the truth of my remarks. It is not many years since M. Velpeau, while *chef de clinique* for M. Roux at the hospital *De Perfectionnement*, in his report of cases occurring in 1826, writes of an unknown variety of disease (*une variété très distincte et non décrite encore*) which he refers to as composed of a multitude of tubercles scattered over the patient's frame, of the consistency of scirrhus; and M. Rayer corroborates the facts of the case and agrees with him. Mr. Rumley also communicates in the *Dublin Med. Press*, April 6th, 1842—his account of the same affection to the Surgical Society of Ireland, which is so accurate that his narrative could well serve for a sufficiently precise

description of fibroma, yet he writes under the undecided caption of "sudden development of subcutaneous tumours;" and again in the same journal for April 13th, 1842, W. G. Dyas gives a yet more detailed history of a like case, without an assumed recognition of its character; but, on the contrary, declaring that as to the nature of so strange a disease he will not venture "to theorize on a subject where we are so scantily supplied with materials for speculation."

And now when we find the disease at once recognized, and even made the subject of a clinical lecture at Westminster Hospital by Dr. Thomson, how strangely consorted is his description of molluscum with a pendulous tumour from the buttocks so remarkable as to be made the interesting object of an accompanying drawing. Dr. Thomson in his lecture on Molluscum gives an account of Latham, with warty nodules over his person, and with several pendulous tumours, which Dr. T. describes as "an extraordinary wallet-like development of the integuments, extending from the middle of the lumbar region to below the nates." (1841.) Indeed, where no other object was entertained but to recount the history of some miraculous growth, in almost every instance, as I have said, we will find the writer mentioning only *incidentally* the presence of numerous tubercles disseminated everywhere about the body; such, for example, as Tillesius's report of the celebrated case of Reinhardt, of Muhlberg, who was born (1742) with these excrescences all over the body, of every size and shape, until one, the most remarkable of them all, culminated in size in the epigastric region, where, he says, "it hung from the skin which covered the xyphoid cartilage and reached the level of the umbilicus." Mr. C. Fowler writes of a man sixty-eight years old, who for twenty years presented acuminated elevations of the skin from the smallest visible elevation, like so many warty growths, until they attained to the large and pendulous tumour hanging from "the crest of the left ilium, and which it was customary with him to place in his breeches pocket for support whilst at work. These tumours were thickly disseminated over the whole cutaneous surfaces, from the crown of the head to the sole of the foot. The skin covering them was perfectly sound, but possessing more of a rose-tint than the surrounding integument." (1839.)

But greater than all of these, because beyond a peradventure the most wonderful instance in the world, is the case of Eleanor Fitzgerald. A natural expression of astonishment escapes me, as I call attention to this extraordinary case, since it has been unaccountably ignored by all who have written, and since I am sure numbers will peruse my brief history of it now for the first time. Yet how strange such silence; when this woman's pathological history, almost fabulous adventures from continent to continent, and startling and frightful aspect were once the subject of the graceful pen and masterly pencil of John Bell, and served to embellish the third volume of his *Principles of Surgery* with two of its most artistic

engravings. But, as a South Carolinian, the deepest feeling of interest impresses me for one who, emigrating from Ireland, nearly one hundred years ago, grew up from childhood in this my native city, married and lived with her husband here for fourteen years, bore him seven children, and seventy-one years ago embarked at Charleston for London, where she exposed her tumours at St Bartholomew's and Guy's hospitals, found her way to Paris, came under the knife of the illustrious Dessault at Hotel Dieu, returns once more to her home in Ireland, encounters the distresses of a rebellion, to escape some of the miseries of which she begs her way back to London that she might become the especial object of Bell's remarkable history. In this case again we learn from Bell that the enormous growth of skin hung from her neck and breast, and that when she opened her clothes massive weights of integument rolled out "like the bowels, one turned over another;" he continues: "The chief volume of tumour certainly begins in that which hangs thick and baggy from the back part of the head From this descends a great voluminous roll of skin, which hangs over the breast and belly, to the length of a yard and a half, like a bundle of intestines; and from her ear, which is elongated to a prodigious length and size, hangs another corresponding roll of skin, which, falling from the neck and face, constitutes a great part of the volume of enlarged skin, which, as she sits, hangs over her knees."

Elsewhere, in this description, it is important to note the circumstance that Bell makes the following remark: "*There may have been, in the skin of this woman, a general tendency to disease, since the shoulder, arms, and face too, in some degree, are studded with tubercles*"—which citation I here italicize, since it indicates as distinctly the existence of fibroma in this woman, as does the remarkable engraving in which this disease is conspicuously exhibited.

These examples suffice, and they have only been adduced to show the common morbid change which associates both of these hypertrophies in one individual.

Under the terms of *Cutis pendula*, *Dermatolysis*, *Pachydermia*, or *Pachylosis*, special varieties or different diseases are sought to be designated by some pathologists; but *dermatolysis*, as the word implies, is nothing more than a preternatural laxity of unaltered skin, the subdermic cellular element of which is so relaxed as to permit tippet-like folds of unchanged skin to fall to inordinate lengths from situations where the serous cellular tissue is naturally loose; but this is very different from the *knarled*, *knotty*, and *knobby* skin of elephantiasis, once so aptly called by Dr. Valentine Mott—*pachydermatocele*—the rugose or tuberoso excrescences of which never form these purse-like appendages or cutaneous sacks, and never attain to such pendulous dimensions.

Of the cause of this rare occurrence in the person of Rawley I have nothing to say, as it is involved in complete obscurity; there was no con-

nective trace of the disease with the lymphatic system; and as to the treatment, it may be said that after the removal of one or two of the molluscous tumours he was, with some apparent benefit, put upon a tablespoonful of the following mixture several times daily: R. Potass. acet. et chlor. āā ʒss; potass. bicarb. ʒij; potass. nitr. ʒj, and sp. nitr. dule. et tr. opii camph., āā ʒss; and in addition to this he also took Donovan's solution for a time, until it was discontinued in consequence of diarrhœa accompanied with blood. Under this medication it was supposed that a diminution in the recurrence of the tubercles was noticed.

More than this treatment could not have been suggested for a disease which possesses a vital duration, and has been known to terminate of itself after a variable period without treatment at all: not that we belong to the modern school of some German dermatologists who depend little upon internal treatment, looking to local applications for local cures, but because our object has been simply to establish the diagnosis once more of a very rare and curious disease, few descriptions of which are to be found in the periodicals of the day.

CHARLESTON, S. C., September, 1874.

ART. X.—*Immobility of the Temporo-Maxillary Articulation, following Gunshot Wound, relieved by Novel Mechanical Means.* By B. J. D. IRWIN, M.D., Surgeon and Brvt. Col. U. S. Army.

IN the autumn of the year 1863, while on duty at Memphis, Tennessee, I was consulted by J. V. B., native of the United States, aged 30, good constitution, temperate habits, a mechanical engineer by profession, who stated that about eighteen months previously he had been wounded by a pistol-bullet, the traject of which passed from side to side through the back part of the mouth. The missile entered at a point about half an inch in front of, and three or four lines below the right external auditory canal, and passed through the masseter museles, impinging on the posterior edge of the coronoid process of the jawbone, and escaping through the fleshy structure of the opposite cheek. The injury was followed by severe suppurative inflammation resulting in thickening, rigidity, and induration of the soft parts, contiguous to the temporo-maxillary articulation, resulting in immobility of the joint.

At the time the patient presented himself to me, he stated that he had been unable to separate his jaws for more than a year, and that he had not partaken of solid food since the receipt of the injury. He had been under the treatment of a distinguished surgeon of Cincinnati, Ohio, who had endeavoured to remove the disability by attempting to break up the anchylosis by means of wedges partially inserted between the jaws, behind the last molar teeth, and at two openings where decay had partially destroyed the teeth, but, after having submitted to several painful and futile efforts, he withdrew and visited New York in search of some more

promising mode of relief. There an attempt was made to break up the obstruction by means of an instrument which he described as "a pair of iron plates with a screw between them," which doubtless was the lever of Scultetus. From his account, it appears that it was found impracticable to insert the instrument sufficiently between the jaws to afford proper leverage to work it. In the efforts made, the edges of the incisor teeth were crushed and splintered. From that time, until presenting himself to me, he had relinquished almost every hope of being able to obtain relief, and was obliged to subsist on such meagre fare as could be sucked through the interstitial space existing between the teeth.

Upon careful examination, I found that, although the jaws were tightly bound together, the joints permitted a discernible amount of lateral motion, and that strong and steady pressure on the lower jaw caused a perceptible separation from the upper. The fruitless efforts made to overcome the disability caused the patient to become sceptical as to the practicability of a cure. In his anxiety for relief in some form, he desired the removal of some of his teeth in order that he might be enabled to partake of food of a more substantial nature than that to which he was then necessarily restricted.

Impressed with the conviction that the articular surfaces were not obliterated, and that the obstruction was dependent upon long disease, and the pressure around the right condyle of strong bands of adventitious tissue, I advised a persistent course of steady pressure, as a means to overcome the adhesion, aided by wedges of some material that would expand by the absorption of moisture. The man entered heartily into the plan, and promised to aid the treatment by patient and persevering submission.

Suitable wedges of dry pine wood were inserted in the spaces made by the injury to and decay of the teeth, and after the measure had been continually persisted in for seven or eight days, it became apparent that the jaws permitted a separation of about one-sixteenth of an inch. The points of the wedges having caused some irritation to the tongue, gutta serena was substituted and found equally efficacious in expanding the parts. It then occurred to me that in case I could succeed in getting a thin band of some flexible material between the jaws, I would be enabled to use it for the purpose of forcibly depressing the lower jaw, while the head was firmly held in the grasp of an assistant.

A strap of thin leather suggested itself as suitable for the purpose, and upon trial was found to answer admirably. After trying its effects every second day for about a week, I found that I had succeeded so far in overcoming the difficulty that it occurred to me that two straps used in opposite directions would answer better than one, as it was found that, despite the efforts of an assistant, the traction on the lower jaw caused the head to follow in the same direction, ending in the strap slipping suddenly from its position, owing, in a great measure, to the effects on it of the moisture from the mouth. I now felt assured that as soon as I could succeed in introducing two folds of the material, I could use them as means to produce extension and counter-extension and substitute the power of the pulley for that of the lever, usually used to overcome ankylosis of that character. Acting on this presumption, I had two straps of light calfskin, about one and a half inches wide and some four feet long, prepared by joining their ends so as to form two loops, one of which to be passed between the jaws and carried over the upper jaw and head, while the other could be passed over the lower jaw, in the same plane, and carried down in

front of the body. The patient having been placed on the operating table and chloroform administered, the straps were placed in proper position; that passed over the upper jaw being attached to a fixed point parallel to the axis of the body in the horizontal position, the hook of a pulley, suitably fixed to a point opposite and on a line with the other, was passed through a loop of the strap over the lower jaw, and gentle, steady traction made, which caused the bones to gradually separate to the extent of some eight or ten lines. Persisting in making gradual and steady traction, after a few moments, I had the satisfaction of seeing the jaws suddenly separated to the normal extent, the result being accomplished without any injury to the parts involved. The apparatus was then removed, and the bone was freely moved on its articular surface, so that by the time the patient recovered from his anæsthetic slumber he was agreeably surprised to find himself able to open his mouth to the full extent, without pain or difficulty. His delight at the result was decidedly amusing, as he joyously announced his determination to promptly indulge in the luxury of various articles of solid food from which he had been deprived so long. The operation was not followed by any inflammatory action, and the functions of the joints were completely restored in the course of three or four days after the operation.

Our surgical authorities are either silent on the treatment of this disease, or have been content to advert to the harsh mechanisms hitherto used by the profession. Even the ingenious modification of Mr. Tamplin's instrument, by Mr. Bigg, is not devoid of danger, as it is simply a transfer of the danger incidental to the application of the metallic screw or lever, as used, from the teeth and jaws to the point of attachment between the lips and maxilla.

By overcoming the disability in the foregoing manner, I believe that the means employed were not only unique but entirely original. In immobility or ankylosis of the temporo-maxillary articulation, not dependent on osseous deposition, this method, after suitable preparation, becomes not only applicable, but possesses many advantages over the mechanical apparatus of Scultetus and others, owing to its freedom from the danger attending violent attempts to force the jaws apart by means of hard, unyielding metallic substance. The power of the screw or lever, when used to force the jaws apart, being applied to a limited surface, the strain at that point becomes so great that the teeth are usually crushed and splintered, or forcibly buried in their bony sockets, or the jaw itself may be fractured.

With thin bands of flexible material, such as silk, linen, webbing, leather, or other suitable substance, extension and counter-extension becomes practicable, and will be found not only devoid of any special inconvenience or danger in their application, but free from the dangerous features likely to follow the use of the mechanical contrivance heretofore used in the treatment of this distressing deformity.

ART. XI.—*Aneurism of Femoral Artery above Origin of Profunda ; Treatment by Flexion ; Recovery.* By STUART ELDRIDGE, M.D., Surgeon-in-Chief, Northern District of Japan, in charge Imperial School of Medicine at Hakodate, Japan.

THE case was that of a Japanese labourer, æt. forty, admitted to General Hospital, Hakodate, on June 10th, 1872, with history of injury a month previously by a fall of a heavy timber upon his left hip, shortly after which accident he had swelling and pain in region of left ileo-femoral articulation, so that he was unable to walk when admitted to hospital. Careful examination revealing neither dislocation nor fracture, the case was put under simple treatment, cold applications and rest being the chief measures employed, and the lameness rapidly improved.

June 12. My Japanese assistant called attention to a suspicious swelling in left groin. On examination I found a small oval aneurism of femoral artery, the size of a small egg, and having its upper portion under Poupart's ligament. Characteristic symptoms of aneurism well marked.

15th. The tumour had rapidly increased in size, and now formed a nearly globular swelling about two inches in diameter. This rapid growth of the tumour led me to suspect an error in first diagnosis, but the most thorough and painstaking examination only served to confirm the diagnosis of aneurism ; in fact, I have never seen a more clearly marked case. Compression of external iliac was found impracticable, on account of the fatness of the abdominal walls. Ligation was then proposed, and peremptorily declined by the patient. There remained a bare possibility of cure by flexion, and this was attempted by confining the limb to the body by bandages, flexion being carried to the utmost limit of endurance. On account of the still swollen and tender condition of the parts about the hip-joint, I directed that the limb should be liberated for one hour in each day, and that during that time gentle passive motion should occasionally be used.

20th. The tumour had not increased in size, and its walls were a little more firm. The patient complained much of the strong flexion, and had several times liberated his leg for two or three hours of the night. A jacket of strong cloth was now fitted to the thorax, and a leather sheath, with straps and rings, was adapted to the thigh. The jacket and thigh sheath were then connected by copper-wire, the junctions of which were covered with wax, and sealed, so that surreptitious liberation of the limb was impossible. In applying the apparatus the flexion was so moderated that the patient expressed confidence in his ability to endure it. As there now appeared to be no soreness or swelling about the hip-joint, the passive motion was given up, and the limb remained constantly flexed from this time till treatment was concluded, save when released for a few minutes each day, that the tumour might be examined.

24th. Pulsation much diminished, and tumour much firmer.

29th. But slight pulsation perceptible and tumour quite firm.

30th to July 4th I was absent in the country. On the evening of July 4, I found the tumour hard, much diminished in size, and without pulsation. The apparatus was removed, flexion having been maintained for twenty days. On account of the condition of the hip-joint at the time flexion was first applied I was fearful that I should find the hip-joint

more or less immovable. I am glad to say, however, that the slight stiffness which existed at the time of removal of the apparatus speedily wore away under passive motion and friction. I saw the patient six months after and found no sign of any return of the disease, although the tumour had diminished but little in size.

An interesting point in this case is the rapid development of the disease, for which I am at a loss to account. I am confident that, on June 10th, there was no aneurism perceptible to ordinary examination, yet on June 15th the tumour had attained the size of a small orange.

ART. XII.—*Case of Femoral Aneurism treated first by Compression and subsequently by Ligation of the External Iliac Artery.* By C. C. F. GAY, M.D., Surgeon Buffalo General Hospital. Reported by BERNARD BARTOW, M.D., Resident Physician. (With a wood-cut.)

RICHARD H., æt. 36, applied to be admitted to the Buffalo General Hospital March 24th, 1874, having a pulsating tumour on the inner side of the left thigh, four inches below Ponpart's ligament. It was about double the size of an adult fist, painful, burning in character, with shooting pains extending down the limb. The pulsation could be discerned by the eye, and when the hand was applied, showed its expansive nature, peculiar to aneurism, seeming uniform throughout, except at one point upon the inner and lower aspect of the tumour about opposite the mouth of the sac—where its fluid contents could be felt—the pulsation was strongest. A distinct thrill could be felt at the upper portion of the tumour, and extending upwards two inches, in a line corresponding with the course of the femoral artery. The ear or stethoscope placed upon the tumour showed the presence of a "bruit," most distinctly heard at the upper margin, and varying in intensity with the position of the limb: being loudest when the whole limb was raised to an angle of forty-five degrees. The diagnosis was plainly aneurism of the superficial femoral artery, and the mouth of the sac was not more than one inch below the origin of the deep femoral branch. The patient had been engaged making steam boilers, and was employed to hold an iron bar—the "miser"—against which the boiler bolts were flattened by hammering. To hold the bar more securely, he had frequently rested one end of it against his thigh, where the aneurism now is, which had received the shock of the hammer. It was evidently of traumatic origin.

His attention was directed to his disease in October of last year, by experiencing sudden lancinating pain in the part; two or three weeks after, he noticed a small tumour, the size of a hazel-nut, in the same place. It was not painful at that time, and gave him no uneasiness until he noticed that it was increasing in size, and becoming painful proportionately. He continued to work notwithstanding the continued enlargement and increase of pain, until entering the hospital—a period of five months.

The condition of the patient was precarious, and not such as to bear a severe operation, being exhausted by pain and sleeplessness. Operative procedures were deferred until his strength could be recruited, which took

about ten days to accomplish. The tumour was meanwhile securely held by imbricated strips of adhesive plaster; absolute rest being enjoined upon the patient.

Ligature of the common femoral, or of the external iliac arteries, were the only operative resources from which to choose; the former was discarded from the liability to secondary hemorrhage.

Before taking this grave step it was thought expedient to employ the treatment by compression, it having been shown that where occlusion of the sac does not follow its use, it causes but little additional disturbance, is without danger, and enhances the probability of recovery from ligation by enlarging the collateral circulation, before the old circulation is shut off, lessening thereby the danger of gangrene.

Digital compression was, accordingly, begun April 4th, and was continued for thirty-one of the following forty-eight hours: seventeen hours being consumed by the patient in sleep, at intervals of from one to six hours. The pain was subdued by hypodermic injections of morphia, gr. $\frac{1}{4}$ to $\frac{1}{3}$, every three or four hours.

The degree of pressure was not such as to completely prevent circulation through the sac, a small amount being allowed to enter, which was regulated by the force of the pulsation and "bruit." These could be made to cease by making the requisite pressure.

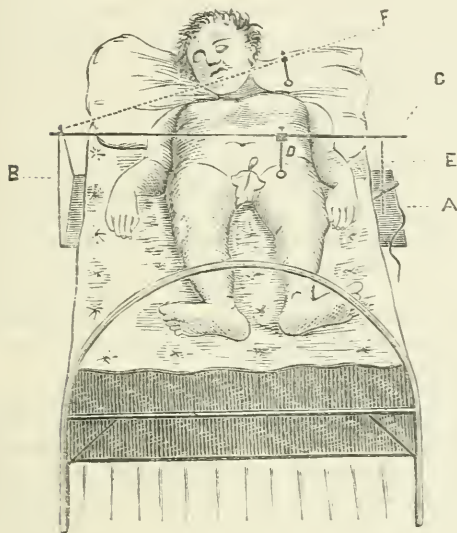
The first effect was to render the whole limb livid; it became perceptibly cooler than the sound one. Patient complained of coldness, numbness, and tingling of the limb, with shooting pains extending from the point of pressure down to the ankle—due probably to pressure upon some branches of the anterior crural nerve. At the end of eight hours the colour and warmth returned; the pulsation of any of the arteries below the tumour could not be felt, whereas they were perceptible before pressure was begun; the tumour had increased in firmness, and the removal of the pressure showed considerable diminution of the force of the pulsation and "bruit."

The following morning, sixteen hours from commencement, the pulsation had diminished to an extent that the patient was free from pain when not under the influence of pressure, which had not been so at any time since his admission notwithstanding the free use of anodynes, nor did he complain of the pulsation giving rise to pain at any time during his subsequent treatment. At the expiration of forty-eight hours the whole limb had become quite œdematous, especially around and below the lower part of the tumour, giving it the appearance of having become diffused.

There was constantly present a tingling and burning sensation, which began at the toes and extended to the groin, and would be aggravated when the foot was touched in any of the manipulations. The tumour had become quite dense; the pulsation and bruit were reduced nearly to one-half their former intensity, and in some places could not be felt or heard where they previously existed. At this point digital compression was abandoned from scarcity of assistants; instrumental compression being substituted. The apparatus used was constructed upon the principle of a lever of the first kind; the fulcrum resting upon the artery and forming the compressor. The following figure will illustrate its application and simplicity.

With the pad in position and the power applied, no movement on the part of the patient could displace it; remaining fixed until the power was relaxed. The irritation of the pad was less than that caused by the frequent changing of the thumbs of the assistants while making digital com-

pression—causing after a time excoriation of the skin. This was continued for periods of six hours, alternating with six hours' intermission for seven days, causing the pulsation and bruit to become reduced to one-fourth of their greatest intensity. The circulation as before was not completely shut off from the sac.



A. Board 1 inch thick, 18 inches in width, extending across the bed between the mattresses.

B. A solid, upright, triangular piece of board firmly fixed to board A, notched at the top to receive end of bar C.

C. A cylindrical bar of hard wood 1 inch in diameter, one end of which fits into notch in the top of upright B, and is secured by a quarter-inch bolt passed through, upon which the bar swings.

D. The compressor: an iron bar 8 inches in length, with padded end, made to slide and turn upon the bar C, secured by a thumb-screw.

E. Double cord passing from board A over bar C, and twisted by a small bar, which is readily confined by allowing one end to rest against the side of the mattress.

F. Showing the bar C when compression is suspended.

The area of surface to which pressure could be applied was one inch in breadth by two and one-half inches long, which was insufficient to allow of a requisite amount of rest to the parts in the intervals. The space had become very irritable and inflamed at the end of this time, and it was necessary to suspend pressure for two days, the effect of which was to lose nearly one-half of the advantage gained, which appeared very promising at the time of the discontinuance.

Pressure was resumed at the same point, but could not be made to the same degree from tenderness of the integument, and was only sufficient to prevent a complete relapse.

Pressure was now removed to the external iliac artery where it crosses the pectineal eminence. It required, however, a greater amount of power to produce the same effect, increasing thereby the danger of sloughing.

The principle kept in view thus far had been to retard the current through the sac, that the deposition of laminæ of coagulum might take place gradually. This failing to occlude the sac, after having been fairly tried, and it now being evident that pressure could be maintained but for a short time, it was decided to try the effect of *stopping* the circulation through the aneurism. The increased pressure caused severe pain, and required large doses of morphia to enable the patient to bear it, which he did for fifteen consecutive hours.

The œdema of the limb increased, and upon the removal of pressure the bruit could be heard faintly at the upper part of the tumour, nearly over the mouth of the sac; but pulsation was not apparent, the tumour being hard and elastic. At the expiration of the following twenty-four hours

the pulsation returned, though pressure had*been continued at intervals sixteen hours of this time. Forty-eight hours from the time when pulsation ceased, pressure was abandoned from the irritability of the compressed surfaces. This is to be regretted, as more progress had been made during that time than in the eleven previous days.

As a last resort before operating, flexion of the thigh upon the abdomen was tried. This controlled the circulation completely, but it also had to be abandoned after six hours, the patient suffering more during this period than from any of the previous methods employed. These forms of treatment had been continued for twelve days, and during more than half of this time the arteries were undergoing compression.

The patient complained of no pain in the tumour or limb at this time, and his general condition was even improved. The measurement around the thigh over the site of the tumour was twenty-two inches, no diminution having followed the treatment. The amount of effusion around the lower part of the tumour increased out of all proportion to that in the remainder of the limb, and it was considered certain by some who examined it that the aneurism had become diffused. Nothing in the appearance of the patient occurred to indicate so grave an accident other than the enlargement, which subsequently disappeared, showing the circumscribed character of the tumour.

April 14, 1874. Dr. Gay, in the presence of a large number of medical gentlemen, ligated the external iliac artery. The "operation from below" (Cooper's) was the one chosen. When the peritoneum was reached it very much resembled the transversalis fascia, being thickened and opaline in colour, due to the pressure made upon the external iliac artery, giving rise to circumscribed inflammation at that point; owing to this abnormal appearance the peritoneum was wounded. The pulsation and bruit ceased immediately after the ligature was tightened.

The wound was closed by a few interrupted sutures, none of which, however, included the peritoneum where it was wounded. Patient rallied well from the operation; felt a pricking or tingling sensation in his instep and ankle, extending to the knee; the limb did not change its colour, and only half of a degree difference in temperature was shown by the thermometer in the popliteal spaces; no increase of the œdema followed; warmth was applied to the limb by means of bottles of hot water, which was grateful to patient; the whole surface of the abdomen was covered with a poultice of hops; opium and stimulants being quite freely administered. No tympanitis or signs of general peritonitis followed; around the margins of wound it was very tender, showing the existence of circumscribed inflammation. Primary union was obtained in the upper part of the wound; sutures were removed the fifth day; lower portion of wound gaped; the edges were approximated by flexing the thighs and raising the shoulders, which also allowed a more free escape of pus.

Two days after operation, the measurement around thigh, over the tumour, was eighteen inches, being a reduction of four inches in the circumference. No pulsation could be distinguished in any of the arteries of the limb. The pricking and burning sensations continued throughout the treatment, being at times actually painful. The ligature came away on the fourteenth day, after which the wound rapidly healed.

Five weeks after operation, patient was able to be out of doors, but was obliged to use crutches on account of a slough upon the back of the heel, the size of a silver dollar, and another upon the great toe. The

former penetrated to the bone, and it was, on this account, four months before he could walk without the assistance of crutches.

No signs of suppuration of the contents of the sac followed the ligation; the sac being of a firm, elastic consistence, and free from pain. The measurement of the thigh, at the site of tumour, further diminished to $17\frac{1}{2}$ inches in circumference, being the least it reached; the thigh after this time becoming more fleshy.

The tumour itself continued to be absorbed, so that its circumscribed form could be more distinctly defined. When patient left hospital, Oct. 1, 1874, it was of the dimensions and shape of the umbrella portion of a moderate sized mushroom. It caused but slight enlargement at that part of thigh, and would not be noticed in a casual observation.

The cicatrix of the upper part of the wound, at which point the peritonem was divided, appears weak. Patient wore a compress and bandage while in hospital, but was advised on going out to wear a truss, as a precautionary measure, to prevent hernial protrusion. Some authors refer this sequel to not including the peritonem in the sutures, which, as before mentioned, was not done in this case. Hernia followed from a similar cause, in an otherwise successful case, where the external iliac artery was tied by Mr. Kirby.¹

The results of this case show the beneficial influence of pressure, and furnish evidence of its value, and sufficient reason why it should be employed in all cases of aneurism when practicable. Had this aneurism been of smaller size compression would probably have superseded the necessity of ligating the artery; or, with an aneurism of the same size, and a greater area upon which to make pressure, there is reason to believe that compression alone would be attended with success.

It corroborates the views of Holmes in regard to the influence of compression in more speedily promoting the new circulation.

The apparatus used in this case answers the purpose of the various and expensive contrivances used, and is within the reach of any one of moderate mechanical ability.

ART. XIII.—*Pruritus Formicans accompanying Pregnancy and resulting in Abortion.* By HORACE Y. EVANS, M.D., of Philadelphia.

AN unusual case illustrating the truth of the following remarks by Neumann has occurred in my practice.

"We have a pruritus cutaneus universalis, as a special kind of cutaneous irritation, which is often connected with physiological changes in the uterus. Thus, women frequently have an intense itching over the whole surface, which continues uninterruptedly during the whole period of their pregnancy."—*Neumann's Handbook of Skin Diseases.*

¹ Manual of Operations of Surgery, by Joseph Bell, F.R.C.S.

Mrs. —, æt. 23 years, of medium size, weighing 104 lbs., of ruddy complexion, and in perfect health, ceased to menstruate on the 29th day of May, 1871. The usual signs of normal pregnancy, including morning sickness, in due time became manifest; quickening occurred at the expiration of the fourth month, at which time her health was excellent.

At the beginning of the sixth month, however, there was a slight attack of indigestion with constipation, which, by the employment of the simplest remedies and by care in diet, was overcome.

Coincident with this attack there appeared a condition of the skin of the hands and forearms, called, as we were taught, pruritus formicans; it gradually spread to the trunk, especially attacking the thorax and back. These paroxysms commencing in the evening would last almost the entire night.

The intolerable pruritus cutaneus attending them would cease only when the torment had exhausted the patient.

After a few hours of rest every vestige of the trouble, save where the surface was torn by scratching, would subside.

These attacks continued daily for four weeks; at times, the mental excitement produced by the formicating sensation would climax in an hysteroidal condition verging on convulsion.

On the 11th of December, without premonition, the waters were expelled, and in twenty hours I delivered her of a living female child weighing $3\frac{1}{2}$ lbs.

The child was perfect except in the development of its nails, and is at this date, September, 1874, nearly as large and quite as healthy as full-termed children are when of her age.

The mother again became pregnant, her courses ceased on the 26th of February, 1872. Her health was excellent and continued thus to the end of the seventh month, at which time the pruritus again returned with greater severity. The mode and character of the attacks were identical with those of the first pregnancy; and terminated in a rapid delivery of a still-born male child on the 26th of October, 1872.

The softened and partially decomposed edge of the placenta indicated that the death of the child had occurred two or three days prior to delivery. The mother did well, and was soon about, enjoying good health.

In December, 1873, she again became *enceinte*; everything went on favourably until July 1st, when the itching again returned. Attacking first the feet, and subsequently spreading, as she expressed it, like insects crawling, until the greater part of the surface of the body was in a state of excessive excitement.

This stereotyped programme continued daily in all its minutiae until the apprehended event again occurred, August 1st, 1874, when she was delivered of a living male child.

The humiliation attending the results in this case arose from the utter futility of my endeavours either to account rationally for the attacks, or even to modify their severity so far as to prevent the thrice repeated sequelæ. Every possible zeal was exercised in investigating the cause.

The uterine before, during, and after pregnancy, as far as could be recognized by digital explorations, revealed nothing abnormal.

The excreta gave no clue to the cause of the disorder.

The attacks of indigestion and pruritus were twice coincident; on the

third occasion the itching appeared without gastric disturbance. The skin, except during the pyrexia, was soft, clean, and at times moist, and free from any unusual papillary elevations; nor could we observe any morbid change in the tissues of the integument before the itching commenced.

I conclude that (a) the skin irritation was a neurosis depending upon a stage of pregnancy; and (b) that the long-continued excitement arising from this hyperæsthesia was the cause of the three premature deliveries.

ART. XIV.—*Case of Carbuncular Inflammation of the Upper Lip.* By A. F. A. KING, M.D., one of the Physicians to Providence Hospital, Washington, D. C.

ON September 1, 1873, I was called to see C. B., a youth of fifteen, who had usually enjoyed good health. Two days ago he had noticed a small red spot on the upper lip, which had appeared without any known cause. This lip was now considerably swollen, red, and stiffened. Swelling and redness also extended to the cheeks presenting an appearance somewhat resembling erysipelas, but there had been no chill and only very little fever. Ordered flaxseed meal poultices and Dover's powder at night.

2d. The swelling and induration have increased with remarkable rapidity. The entire upper lip is now at least one inch and a quarter in thickness; it overlaps and entirely conceals from view the lower one, which is not at all inflamed. Both cheeks, as far as the lower eyelids, are horny, red, and tender to the touch. The mucous surface of the affected lip is compressed against and retains deep impressions of the teeth; on its outer surface there are several cribriform openings which will admit the point of a probe to the depth of one-eighth of an inch; from these there is a scanty discharge of ill-looking pus. Slight fever in the evening; restlessness at night; considerable prostration, but nothing approaching typhoid. Tongue tolerably clean, and appetite moderately good. To continue poultices. A vertical incision was made in the median line of the lip. It bled freely, but there was but little discharge of pus. Another horizontal incision was made on the mucous surface over a prominent, puffy part; from this a little pus was discharged. To have tr. ferri chlor. grt. xx, ter in die, and beef-tea, milk, etc., *ad lib.*, taking them through a glass tube.

3d. The swelling, livid redness, and induration have increased to an alarming extent. Patient very nervous and restless, with increase of (but still not much) fever. Tongue slightly furred. Another free incision made on mucous surface over prominent point. Some pus and much blood discharged. To continue iron, and take quinia sulph. gr. v, ter in die, with whisky ʒss every two hours. Yeast poultices instead of flaxseed.

4th. To day there is a more free discharge of tolerably laudable pus both from the incisions as well as from the cribriform openings, which

last have increased in size and number. The inflammation has not increased. Patient in better spirits and less nervous. Continued treatment.

8th. During the last four days there has been a steady improvement, and convalescence is now established. He has continued iron and whisky, with smaller doses of quinia. The lip has discharged very freely, and the swelling has gone down. A hard red point midway between the lip and eyelid, on the side of the cheek near the nose, threatened to suppurate but disappeared by resolution.

Remarks.—I have deemed this case of sufficient interest to place on record: *first*, because the disease is comparatively rare—certainly the literature of the subject is very scanty; *second*, the affection described is not very remote from, and is probably a mild form of, so-called “malignant pustule.” Dr. Willard Parker (*New York Journal of Medicine*, May, 1854) describes three cases of a “peculiar form of inflammation of the lips and face resembling malignant pustule.” The patients were all young men in apparently good health at the time of seizure. Two out of the three cases were speedily fatal. The most elaborate paper I have been able to find on the subject is one by Dr. Frederick D. Lente, published in the *American Journal of Medical Sciences*, April, 1859, p. 308. From an analysis of this and other papers I have constructed the following table, which exhibits the age, sex, result, etc., of twenty cases:—

Age in years.	Sex	Seat of disease.	Name of disease as given by reporter.	Name of reporter.	Result of case.
23	Male	Lower lip	“Peculiar form of inflammation of the lips and face, resembling malignant pustule”	Dr. Willard Parker	Death.
45	Male	Lower lip	“ “ “	“ “	Recovery.
30	Female	Lower lip	“ “ “	“ “	Death.
26	Male	Lower lip	“ “ “	“ “	Death.
40	Male	Upper lip	“Carbuncular inflammation of the lip	Dr. F. D. Lente	Recovery.
.....	Female	Upper lip	<i>Sui generis</i> : between carbuncle and malignant pustule	Dr. John Watson	Recovery.
“Young”	Female	Lower lip	.....	“ “	Death.
.....	.....	Lower lip	.....	Dr. Ayers	Recovery.
.....	.....	Lower lip	.....	“ “	Recovery.
.....	Female	Lower lip	“Malignant tubercle”	Dr. A. L. Peirson	Recovery.
.....	Male	Chin	“ “ “	“ “	Death.
17	Male	Neck	“ “ “	“ “	Recovery.
15	Male	“Lip”	“ “ “	“ “	Death.
“Lad”	Male	Lower lip	“ “ “	“ “	Recovery.
.....	Male	Forehead	“ “ “	“ “	Death.
.....	.....	.....	.....	Dr. Buck	Death.
.....	.....	.....	.....	“ “	Death.
.....	.....	.....	.....	“ “	Death.
.....	.....	.....	.....	“ “	Recovery.
15	Male	Upper lip	Carbuncular inflammation of lip	Dr. A. F. A. King	Recovery.

ART. XV.—*Case of Congenital Absence of the Iris in both Eyes (Irideremia), with perfect Power of Accommodation.* By GEORGE REULING, M.D., Surgeon to the Maryland Eye and Ear Institute, Baltimore.

Miss S. S., of Washington, D. C., seventeen years of age, a pupil of one of the largest educational institutes in Baltimore, sought advice because of some eye-trouble she experienced after long-continued reading.

Upon examination, I found the iris absent in both eyes. The lens, which was distinctly visible, was crossed here and there by opaque, sharply defined, for the most part linear, striations, which, as a general rule, followed the direction of the lenticular fibres and but slightly interfered with the power of sight. The lenticular edge was clearly to be seen, the lens was in its normal position, the retina and the optic nerve, as well as the bloodvessels, perfectly normal. The eyes were emmetropic. No. I. test-type of Snellen was read at a distance of 10". $S = \frac{2}{3} \frac{0}{0}$ R and $\frac{2}{4} \frac{0}{0}$ L. There was slight insufficiency of the recti, corrected by means of a 4° prism. The fine black circle surrounding the periphery of the lens was no doubt caused by the imperfectly developed ciliary processes, as well as by the normal choroidal tensor over which the dark uveal stratum passed. The range of the accommodation was almost $\frac{1}{6}$; for after a 2° prism had been applied, Snellen's No. I. could be perfectly well distinguished at from 4" to 12": $\frac{1}{4} - \frac{1}{6} = \frac{1}{12}$. During the accommodation for near objects the black lenticular margin was observed to grow broader; when the eye gazed at distant objects it became narrower; thus proving that it moved from and advanced towards its *point d'appui*. This latter circumstance also confirms the fact of an increase and diminution in the diameter of the lens.

I observed this phenomenon to an even greater degree upon dropping into her eyes a solution of atropia, and on introducing Calabar bean (gelatin disks). After introducing two of these latter, a pretty severe pain set in and continued for over an hour. Even after the lapse of two hours the pain returned, accompanied by a copious discharge of tears, whenever the accommodative powers were brought into requisition.

The punctum proximum was, approximately, determined to be 4", whilst after a two grain solution of atropia had been instilled, it was found to be 14".

This observation is confirmed by Otto Becker, who found that in albinotic eyes, the iris being transparent, the space between the ciliary processes and the edge of the lens becomes increased and diminished during the different conditions of the accommodative process, as well as after the introduction of Calabar bean or atropia.

Our case is another proof, therefore, of the exclusive activity, *i. e.*, necessity of the ciliary muscle in the process of the accommodation. It also goes to prove that the ciliary ligament or rather its ciliary plexus, is, like the iris, influenced by mydriatics and myotics.

The movements of the iris during the process of the accommodation are therefore exclusively to be looked upon as belonging to the class of the "associated" movements, which fact, indeed, has already been shown

us by Becker, whose observations went to prove that during the accommodation for near objects, the pupil always contracts a longer or shorter time after the accommodation proper.

ART. XVI.—*Sequel to Case of Stricture of the Rectum, published in the Number of this Journal for July, 1873.* By FREDERIC D. LENTE, M.D., of Cold Spring, N. Y.

I RESUME the history of the case with the date, March 5, 1873.¹ At this date Dr. House examined, after the lapse of a month from his last examination, and found the rectum in good condition.

April 7. Dr. House, on examination to-day, finds a contraction *below* the original seat of stricture, which, however, easily admits the index finger.

19th. Visited the patient to-day with Dr. House, and found a contraction just below the lower border of the original stricture, which would not admit the index finger to the first joint. Passing in the little finger I found the gut, *above* the contraction, apparently healthy, feeling very different from what it did at my last examination. The purulent discharge, which has continued, to a slight extent, ever since the operation, has almost disappeared. Patient looks like a different being; her face is full, complexion good, and all the worn, cachectic look, which so closely simulated the characteristic of malignant disease, has also disappeared.

29th. The effects of the new disease are beginning to tell on the system, interfering more with exercise, defecation, etc. The stricture still admits the little finger. It is firm and resisting, but not so cartilaginous as before. It is, on speculum examination, seen to be much more vascular. Patient was prepared for *operation* as before, thoroughly etherized, and, with the assistance of Drs. House and N. A. Garrison, I proceeded to incise the stricture anteriorly. At the first cut, an artery, apparently of considerable size, threw a jet into my face, and bled freely, before its exact location could be determined by rapid sponging. It was secured, with considerable facility, by means of my thread-carrier and Carroll's knot-tier, having been first seized with Whitehead's tenaculum. Being obliged to continue the incision in its immediate proximity, it was again divided and again secured in the same manner. Subsequently, the knot, being unobserved, was pulled off, but the hemorrhage did not recur. The incision was now carried further up, as the stricture was found to be an inch or more in depth. Again an artery, higher up, spirted and was tied. Finding how numerous the arteries were, and the delay in securing them, I used my finger and finger-nail in the median line, and, with considerable force, gradually ruptured the bands of stricture so as to admit the passage of Sims's speculum throughout its whole extent. Finding a band at the upper border of the stricture, which could not, with reasonable force, be

¹ The case was published in the July, 1873, number of this Journal, but was *written* before March 5, when it was supposed to be ended with the cure of the patient, and sent in for publication in the April number; but, arriving a little too late, was deferred by the editor to the July number. This will explain the apparent discrepancy of dates.

ruptured, I again had recourse to the knife, and again had a spouting artery, which was tied as before. As the disease did not appear to involve the *posterior* wall of the rectum, it was not interfered with. We all examined the gut, and found it completely liberated. To test the matter I passed up the three-inch sponge above the seat of stricture, and drew it through the anus by means of the attached cord. There was but little *oozing* of blood during the operation. Finding a tendency in the artery first tied, and subsequently liberated, to bleed a little, and, fearing subsequent hemorrhage, I seized it, and some tissues around it, with Thomas's forceps, previously described, and passed around the mass a ligature by means of the thread-carrier and tied it. The operation, from the commencement of the etherization, lasted an hour and a quarter, and would have been of less duration had there not been a scarcity of assistants.

May 2. Dr. House writes to say "our patient is doing admirably. Has had no trouble of any kind since the operation."

7th. Dr. House writes: "Your letter finds Mrs. W. doing well. I used the dilator on the 5th with less pain than before; allowed it to remain fifteen minutes."

13th. To-day visited and examined the patient with Dr. H. Find the rectum capacious and not disposed to contract, and not very tender to digital examination. Used the dilator with an additional quantity of water, enlarging the circumference to six and three-quarter inches. The pain was considerable, but passed off very soon. Directed its use, for the present, once a week. Patient's condition excellent except anorexia.

24th. Anorexia still continues. Complaints of some tenesmus and considerable soreness about an inch and a half from the anus on introducing the dilator or syringe.

June 17. Not so well. A good deal of straining, nausea, and utter loss of relish for any food. Pulse more feeble; the sphincter so irritable as almost to preclude the use of the dilator. On examination, it is evident that a stricture is again forming, *but below* the last. It barely admits the index finger; and, after sweeping it around above the stricture, where the gut appears perfectly free and pliable, its withdrawal is followed by a tablespoonful of thick, bloody mucus. Divided the external sphincter posteriorly, and thoroughly; would have continued the incision upward through the stricture, but was unprepared with any but pocket-case instruments to arrest hemorrhage.

Aug. 1. Visited the patient in company with Drs. House and Sloat, at her residence in Haverstraw. The wound has healed, and relieved the irritability of the external sphincter. Stricture in the same state as at last visit. General condition bad. Proceeded, with the assistance of my medical friends, and under ether, to divide the stricture, as before, thoroughly, but only posteriorly, as the gut seemed to be in a good condition anteriorly. There was rather rapid hemorrhage from two or three arteries, but it ceased spontaneously.

Sept. 4. Saw the patient to-day for the first time since last operation, though consulting several times by letter with Dr. House in the interim. Did not suffer much from the immediate effects of the operation. Her local symptoms were considerably relieved, but she continued to run down, could scarcely manage to swallow any food, subsisted for a time mostly on brandy and champagne; the rectal discharge increased, and became dark and offensive; the soreness seemed to her to extend gradually upwards along the intestinal and alimentary tracts, until it reached the

œsophagus and fauces ; at the same time she expectorated a considerable quantity of matter, precisely resembling in odour and appearance, that from the rectum ; and, for some time, her condition seemed to the doctor and her friends to be desperate.

It was impossible for me to visit her in person, so I advised the doctor to try the internal use of carbolic acid (the carbolic enemata had been continued), and she took a grain in pill three times a day. After a time, her symptoms improved very gradually, and she has steadily gained, in every respect, until now, when she looks almost as well as she did two months after the first operation ; and, in some respects, she is better than she has been at any time ; that is to say, the rectal discharge has entirely ceased. On careful examination, I find the local condition as follows : The external sphincter has regained its irritability to some extent (it was not interfered with at the last operation). The parts have contracted but little since the operation, and the recto-vaginal wall has regained its normal condition, all the deposits having been absorbed. Dr. House used the dilator a week ago for the first time, and I applied it to-day, expanding it to its full extent, and without much pain. Advised to continue as often as the condition of the parts will admit.

Oct. 23. Has latterly been rapidly improving in every respect, and considers herself *better than she has been for two or three years*, as her troublesome dyspeptic symptoms have entirely disappeared. Can travel about as well as any one. She is here on a visit to this place, and, on making an examination, I find the undue contractility of the external sphincter entirely gone. The seat of the last stricture readily admits the index finger, and feels softer than it did ; says her evacuations are formed, and *as painless and natural as they ever were*. On more careful examination of the condition and position of the uterus, find that it is in a state of retroversion, very tender on pressure, especially over the fundus, and that a great deal of the pain, of which she had complained in stretching the stricture, has been undoubtedly due to the pressure of the instrument above it on the fundus. The cervix is also very tender, and rests directly upon the seat of the operation. Dilated with Molesworth's dilator.

30th. Dilated again to a diameter of three-fourths of an inch. Considerable pain.

Nov. 26. Dilated with the finger. By avoiding pressure on the cervix uteri, the pain of introduction and examination is much lessened. Dilatation has lately caused nausea during the operation. Advised to pass a moderate sized sponge into the vagina so as to keep the cervix away from the seat of stricture.

27th. Applied the galvanic current (14 cells) for eight minutes, to the stricture, and C. G. for three minutes. Could only bear one pair of cells.

Dec. 9. The G. was applied to-day, for the third time, to the stricture. It appears to soften the irregularities and to render it more dilatable. Some rough excrescences have formed lately above and below the seat of stricture.

1874. Jan. 26. The G. to the stricture discontinued, as the advantages are but slight. Dilatation continued on alternate days.

Feb. 7. It has been evident, for some time past, that the gut was slowly but surely contracting again *at the lower border* of last stricture, in spite of the dilatation. I accordingly again operated to-day, in the usual manner, with the assistance of Dr. G. W. Murdock and Dr. J. C. Young, of

Bellevue Hospital. Divided the stricture fully anteriorly and posteriorly, an inch or more in length, and extending to the verge of the anus.

19th. There are indications of contraction of the stricture, mainly at its lower part. Etherized patient and stretched freely with Molesworth's dilator, third size.

June 1. Since last date she has been using the dilator, either herself, by means of a curved tube contrived by Dr. Molesworth for this case, or with the assistance of a friend. The rectum is becoming constantly more natural to the touch, above the internal sphincter; indeed it hardly presents any traces of the formidable disease first encountered. The internal sphincter is now, however, itself becoming the seat of stricture, and there are some of the rough deposits which have been so often described. General health good, notwithstanding various drawbacks, one resulting from the sudden and violent death of her husband from a railway accident; and from repeated experience of violent "bilious attacks," diarrhœa, and sometimes dysentery.

Aug. 16. For some weeks patient has had increasing difficulty and pain in using the dilator, notwithstanding a forcible rupture of the external sphincter, under ether, which gave only temporary relief. Has had to give up the dilator, for ten days past, on account of a sharp attack of dysentery from which she has just recovered. Has also had several attacks of malarious disease. In fact, the abdominal troubles have probably this origin.

A careful examination, participated in by Drs. Young, of Bellevue Hospital, and Dr. Murdock, of this place, reveals the fact that, though the rectum, above the internal sphincter *has entirely regained its normal feel and appearance*, and all the other parts becoming smoother, in consequence of the gradual absorption of the irregularities above alluded to, there is an increasing contraction of the internal sphincter, which, upon speculum examination, looks like a band of a white cicatricial tissue. It was accordingly determined to have recourse to the knife, and to-day, with the assistance of these gentlemen, I divided this band (which proved to be half an inch in thickness) posteriorly, commencing in the healthy mucous membrane above, and extending to, but not through, the external sphincter. It was very dense, almost cartilaginous. There was no bleeding to speak of.

Sept. 25. Has had attacks of malarious trouble, and her bowels are more or less loose, never having a *formed* passage until a few days ago, when she was put on the fluid extract of encalyptus, since which time her diarrhœa has been checked, and she now has regular, healthy evacuations, and there is a manifest improvement in the feel of the parts since; the warty-like feel disappearing, and the parts smoothing down perceptibly. No dilatation has been used since the operation. The uterus is becoming more and more tender, and she cannot wear the sponge, and cannot bear the lever pessary, which I have tried twice. Under these circumstances I sent the patient, for consultation, to my friend Dr. Thomas A. Emmet, and requested a written opinion, from which I extract the following:—

"Sept. 29, 1874. I have examined Mrs. W.'s condition with great care, and am exceedingly obliged to you for giving me the opportunity of doing so. I can detect no trace, with the finger, of the seat of stricture, as the walls of the rectum were soft and smooth throughout. The only feature about the case which does not promise well for the future is, the *friable* feeling of the *sphincter ani*, and want of elasticity in the parts. Under ordinary circumstances, the condition of irritability, which exists here, might be accounted for, and attributed to the condition of the *uterus*. I found the latter enlarged and retro-

verted. Whatever the result may be *hereafter*, the present condition of the case entitles you to great credit," etc. etc.

This is under date of Sept. 29, 1874.

I will merely remark, with reference to Dr. Emmet's fears of the "friable" condition of the parts, that, if he had seen the previous condition, and the recent marked improvement in the smoothing down of the gut, and increase of elasticity, especially after the passages became formed and somewhat hard, he would have laid less stress upon it. I consider that the case is cured as far as the *stricture* is concerned, and I have refrained from giving this sequel of my former communication until I should become satisfied of the result.

Remarks.—The free arterial hemorrhage which attended the second operation, or the one first described in this paper, though rather startling at first, was not a source of regret, since no injurious quantity of blood was lost; and its prompt arrest, by the means which had been before devised and recommended, and which I had not an opportunity of using at my first operation, serves to demonstrate, as far as one case can, their feasibility. The tissue in which the divided vessels are situated being generally very dense, it is better to draw the first knot as tightly as the strength of the thread will allow, or it will, during the subsequent rough manipulations about it, be pulled off; but, even if this happen, as it did on two occasions in this operation, the firm compression of the coats of the vessel seems to prevent, in a great degree, further bleeding. When we take into consideration that I had but one assistant to cleanse the wound, and in the application of the various instruments required to secure vessels in a deep cavity (the other being engaged in holding the speculum in position) it may readily be conceived how comparatively simple a matter it would be where a requisite number of those, trained to surgical manipulations, could be obtained. However, as I gained experience on the subject of hemorrhage from the vessels concerned in these operations, I came to the conclusion that, as a general rule, we can safely leave the most, if not all the divided vessels, to take care of themselves; that they will bleed furiously, for a short time, and have the appearance of considerable size, but that they are very minute originally, and merely enlarged by the long continuance of inflammatory disease in the part they supply, and that, as usual with such vessels, "their bark is worse than their bite," and that we lose time and more blood by attempting to secure them. This agrees with M. Verneuil's recent experience, that they may be disregarded when we cut, however freely, *directly in the median line*. He refers to the *posterior* division, as he thinks apparently that anterior division is unnecessary. In the case of *females* I cannot subscribe to this opinion. M. Verneuil also advises always to extend the incisions out at the anus, dividing the external sphincter. I have tried both plans; and my reason, in my last operation, for not doing so is, that, when done at a previous operation, the

lowest point of the incision, at the verge of the anus, was very slow in healing, and thus interfered, for some time, with the use of the dilator.

In conclusion, I desire to call again attention to Whitehead's dilator, for the benefit of those who may prefer its use, though greatly inferior, in my opinion, to Molesworth's. He recommends a silk bag, devised by a patient, between the layers of the rubber. I could not, for some time, exactly comprehend the rationale of this addition, and finally discovered that, without this, the instrument is "a delusion and a snare" to a great extent, except at the outset of dilatation; for this reason, that the gut, above and below the stricture, is very extensible, as is also the thin rubber which enables the dilator to be expanded to the extent of several inches in diameter, without the stricture yielding one inch. The silk, not being extensible, *when fully expanded, limits* the dilatation above and below the stricture, and thus permits the additional water thrown in to stretch the stricture itself.

COLD SPRING, Oct. 17, 1874.

ART. XVII.—*Note of the Termination of a Case of Uterine Cancer in which Lumbar Colotomy was performed.* By JOHN H. PACKARD, M.D., of Philadelphia.

IN the number of this Journal for July, 1874, I reported the case of Mrs. H., in whom, on account of obstruction of the rectum by a malignant uterine tumour, the operation of lumbar colotomy was resorted to, with results which fully justified the adoption of that measure.

At the date of the former report, fifteen weeks had elapsed from the time of the operation. For nineteen weeks longer, or thirty-four weeks in all—eight months and a half—she maintained her struggle with the original disease, succumbing at length on the 12th of October. During all this period, there was no trouble whatever in keeping her entirely free from any annoyance, either to herself or to those around her, from the existence of the artificial anus; there was no involuntary discharge of flatus or feces, and the evacuations occurred with no more trouble than in the case of any other bed-ridden person.

An autopsy was made about 26 hours after death by Mr. Vogler, Dr. Boissot's student, in the presence of Dr. B. and myself. The uterus and vagina were extensively diseased, the cancerous deposits involving them almost in one solid mass with the greatly enlarged lymphatic glands. The glands lying within the broad ligaments and on the anterior face of the sacrum were converted into large nodular masses of adventitious material. Among these masses the rectum wound so tortuously that a probe could

not be made to follow it until they had been divided with the knife. Its wall was rendered very firm and rigid by the invasion of its tissues, and its calibre almost obliterated. The bladder was wholly uninvolved.

One thing surprised both Dr. B. and myself, namely, the great length of bowel—about 18 inches—between the artificial opening and the anus; it was owing to the existence of a very long sigmoid flexure.

ART. XVIII.—*Case of Aneurism of the Abdominal Aorta successfully treated by Large Doses of Iodide of Potassium.* By THOS. M. MATHEWS, M.D., of Mount Enterprise, Rush Co., Texas.

DURING the past winter I was called to attend Mrs. W., æt. 38, married some twelve or fifteen years, but had never had any children. I failed at the time to detect any cause for her general ill health, but in April last I discovered a large aneurism of the abdominal aorta, which on close examination I found to extend from under the sternum obliquely downward to below the umbilicus.

Having been taught that such a condition was necessarily fatal, I should have given the case up as such had I not seen the article, on page 539 of the *Amer. Journ. of the Med. Sciences* for April, 1874, by Dr. George W. Balfour on large doses of the iodide of potassium in such cases. As a *dernier ressort* I determined to give the drug a trial. I at once put the lady upon twelve and a half grains dissolved in the syrup of sarsaparilla three times a day, and increased the dose each day till it reached fifteen grains. I then gave fifteen grains four times in the twenty-four hours. *My patient began at once to improve*; the large doses seemed at first to irritate the stomach a little, but this soon passed away. When I began the use of the remedy the lady was confined closely to her bed; could not sleep unless under the influence of chloral; now, five months have passed, she is able to be up nearly all the while; sleeps without the soporific; rides about, even on horseback, a good deal, and is apparently in very good health. The aneurismal thrill and the bruit once so distinct are nearly absent, though the remains of the "sac" can be distinctly felt, yet very much smaller than it was at first. I used nothing but the iodide of potassium, except during June, when I gave between the iodide doses of fl. ext. ergot, ʒj, and tr. digitalis, gtt. v. I have kept up the use of the iodide steadily till now, except for two weeks; at present I am giving iodide of potassium, gr. v, and carbonate of ammonia, gr. iij, three times a day.

Believing that in the potassic salt we have a remedy which will in a very great measure control, if not cure, this disease, which was formerly believed to be incurable, and hoping that others may be induced to try the remedy, I submit it to the consideration of the profession.

ART. XIX.—*On the Similarity between the Red Blood-Corpuscles of Man and those of certain other Mammals, especially the Dog; considered in connection with the Diagnosis of Blood-stains in Criminal Cases.* By J. J. WOODWARD, M.D., U. S. Army.

IN his recent paper "*On the Value of High Powers in the Diagnosis of Blood-stains*,"¹ Dr. Joseph G. Richardson, of Philadelphia, affirms the possibility of distinguishing the blood of man from that of the pig, ox, red-deer, cat, horse, sheep, and goat, by the measurement of the red blood-corpuscles, even in dried stains such as the microscopist is called upon to examine in criminal cases.

The circumstance that Dr. Richardson does not mention any animal whose blood-corpuscles cannot be thus distinguished from those of man, and the warmth with which he combats the prudent counsel which Virchow,² Casper,³ and Taylor,⁴ in common with other experts,⁵ have

¹ American Journal of the Medical Sciences, July, 1874, p. 102; also the Monthly Microscopical Journal, September, 1874, p. 130. This paper has attracted considerable attention. See, for example, the Lancet, August, 1874, p. 210; the Medical Times and Gazette, August 8, 1874, p. 151; and the London Medical Record, September 9, 1874, p. 560. The last of these Journals is the only one to raise a warning voice: "Dr. Richardson's paper is interesting, but we are afraid the question often put, 'What is the source of the blood in a stain?' must go unanswered. In questions where capital punishment hangs on scientific evidence, that evidence must be of no doubtful or questionable nature."

² Rud. Virchow—Ueber die forensische Untersuchung von trockenen Blut-flecken—Virchow's Archiv., Bd. xii. (1857), S. 334.

³ J. L. Casper—Handbook of Forensic Medicine—translation of New Sydenham Society, London, 1861-5, vol. i. p. 138 *et seq.*; also p. 198, *et seq.* See also the new and enlarged German edition of the same by Dr. Carl Liman—Practisches Handbuch der Gerichtlichen Medicin—5 Aufl. Berlin, 1871, Bd. II., S. 173, *et seq.*

⁴ A. S. Taylor—The Principles and Practice of Medical Jurisprudence—2d edit. London, 1873, vol. i. p. 548.

⁵ Among others, I may mention E. Brücke—Ueber die gerichtsarztliche Untersuchung von Blutflecken—Wiener Med. Wochenschrift, Jahrgang, 1857, S. 425. Hermann Friedberg—Histologie des Blutes mit besonderer Rücksicht auf die forensische Diagnostik—Berlin, 1852. Andrew Fleming—Blood-Stains—*American Journal of the Medical Sciences*, vol. xxxvii., N. S. (1859), p. 84. Wharton and Stillé—Medical Jurisprudence—3d ed., Philadelphia, 1873, vol. ii. p. 696. M. Z. Roussin—Examen Médico-légal des Taches de Sang—*Annales d'Hygiène* tome xxiii. (1865), p. 139. For an elaborate history of the growth of our knowledge on the subject up to 1860, the reader may consult B. Ritter—Zur Geschichte der Gerichtsarztlichen Ausmittelung der Blutflecken, in Henke's *Zeitschrift für die Staatsarzneikunde*, 1860. Drittes Vierteljahrheft, § 31. The chief authority in favour of the possibility of distinguishing the blood-corpuscles of man from

offered to enthusiastic microscopists in connection with this subject, led me, on perusing his paper, to fear he would be understood as teaching, in a general way, that it can be determined by the microscope with certainty whether a given stain is composed of human blood or not; and this fear has been justified by some of the notices of his essay which have since appeared in the medical journals.

Now this subject is one which, from time to time, becomes of great importance in criminal cases, and justice, no less than scientific accuracy, demands that the microscopist, when employed as an expert, shall not pretend to a certainty which he does not possess. I suppose no experienced microscopist, who has thoroughly investigated this subject, will be misled by Dr. Richardson's paper, but there are many physicians who possess microscopes, and work with them more or less, to whom a partial statement of facts on such a subject as this is peculiarly dangerous, and the object of the present paper is to point out to this class of readers that Dr. Richardson's statement of the case, even if all he claims be granted as true, is, after all, not the whole truth; that there are certain mammals, among them the dog, the constant companion of man, whose red blood-corpuscles are so nearly identical in size with those of human blood, that they cannot be distinguished with any power of the microscope, even in fresh blood, much less in dried stains; and that, consequently, it is never in the power of the microscopist to affirm truthfully, on the strength of microscopical investigation, that a given stain is positively composed of human blood, and could not have been derived from the blood of any animal but man.

I must do Dr. Richardson the justice to state, at the outset, that these facts are well known to him, although, from motives of prudence, he has thought proper to be silent with regard to them. In a note dated October 19, 1874, in reply to one in which I informed him of my intention to write the present paper, he says: "I should be very much obliged to you if you would add to your remarks (in a foot-note or otherwise), that, in communicating with me, you found me fully aware of the difficulty of making anything more than a differential diagnosis, even in the cases I specified, and of the impossibility of distinguishing the blood of man from that of a monkey or dog, but that I had refrained from giving prominence to these facts," lest an improper use should be made of them in the defence of criminals.

I must, however, entirely dissent from this view of the matter. I can-

those of other mammalia, is Carl Schmidt—Die Diagnostik Verdächtiger Flecke—Mitan u. Leipzig, 1848. I have not yet obtained a copy of this paper, but find abstracts of it in Schmidt's *Jarbüch* for 1849, p. 258, and Ritter's *History*, just cited. The reader will also find liberal extracts in Fleming's paper, cited above. The extravagant views of Schmidt are especially confuted by Brücke and Virchow in the papers cited above.

not forget, that, on more than one occasion in the past, witnesses summoned as scientific experts have been so misguided as to go into courts of justice, and swear positively, on the strength of microscopical examination, that particular stains were human blood;¹ and I think the danger that others may do so in the future, to the prejudice of innocent men, is more to be feared than the possibility that an acquaintance with the true limits of our knowledge on this subject may sometimes be made use of in the unscrupulous defence of real criminals. I have, therefore, no hesitation whatever as to my duty, in speaking of this subject at all, to speak the whole truth, so far as it is known to me; and in so doing I am happy to say I follow the practice of many of the best writers on medical jurisprudence.

In the instance of the dog, it might at first sight be supposed, from the estimates of the average diameters of the red corpuscles in this animal and in man, as given by Gulliver and Welcker, the authorities most frequently cited in the modern text-books, that a certain small, but constant and measurable difference existed, which might serve as the basis of a distinction in legal cases. This inference, however, is not only contrary to the facts of the case, but an examination of the original essays of the authors cited shows that it is not borne out by their observations.

The mean diameter of the red corpuscles of man, according to Gulliver,² is 1-3200th of an inch ($=.00794$ millimètres), while that of the red corpuscles of the dog is 1-3542d of an inch ($=.00716$ mm.). With regard to his estimate for the human corpuscle, Mr. Gulliver³ says: "We are only speaking now of the average size; for they vary like other organisms; so that in a single drop of the same blood you may find corpuscles

¹ Passing by certain American cases, I may refer, in illustration of this statement, to the celebrated English case, *Reg. v. Thomas Nation* (Taunton Spring Assizes, 1857, p. 279), with regard to which the editor of the *London Medical Journal* has pithily said, that the testimony of the expert must be looked upon "as most disingenuous clap-trap, and rather what we might expect to hear at some popular lecture, where the 'wonders of the microscope' form the theme of declamation to a gaping audience, than the solemn asseveration on oath of a man of science in a court of justice."—*Med. Times and Gaz.*, April, 1857, p. 366.

² George Gulliver, F.R.S.—*Lectures on the Blood of Vertebrata*—*Med. Times and Gazette*, vol. ii. of 1862, p. 101, *et seq.*—On the Red Corpuscles of the Blood of Vertebrata, etc., *Proceedings of the Zoological Society of London*, 1862, p. 91.—The Sydenham Society edition of the Works of William Hewson, London, 1846, p. 216, *et seq.*—Appendix to Gerber's *Elements of the General and Minute Anatomy of Man and the Mammalia*, London, 1842, p. 31, *et seq.*—Observations on the Blood-Corpuscles, or Red Disks of the Mammiferous Animals, *London and Edinburgh Philosophical Magazine*, vol. xvi. (1840), pp. 23, 105, and 195; also vol. xvii. pp. 139 and 325; also vol. xxi. (1842), p. 107. For a list of other papers referring to the blood-corpuscles of various animals, see the Works of William Hewson above cited, note to p. 236.

³ *Med. Times and Gaz.*, vol. ii. of 1842, p. 157.

either a third larger or a third smaller than the mean size, and even still greater extremes." According to this statement, the human red blood-corpuscles may vary in a single drop of blood from 1-4800th of an inch ($=.00529$ mm.) to 1-2400th ($=.01058$ mm.). Mr. Gulliver tells us further, in the same paragraph: "My own estimate of the average size has been deduced from numberless measurements, frequently repeated during the course of several years, of corpuscles quite fresh and swimming in the blood, and in various artificial mixtures, as well in the dry state." I have not, however, been able to find, in those of his papers which I have examined, any of the numerical data from which this average size was deduced.

In the table of measurements appended to Gerber's Elements, in which for the first time he gave "mean or average sizes" (in previous papers he had only recorded "common sizes," occasionally supplementing these by the extremes observed), Mr. Gulliver explained his method of arriving at the average size as follows: "The common sized corpuscles are first set down, then those of small and large size, and lastly, the average deduced from a computation of the whole."¹ In this table the measurements for the common dog are given as follows:²—

Common sizes	{	1-4000 of an inch.
		1-3500 " "
		1-3200 " "
Small size		1-4570 " "
Large size		1-2900 " "
<hr/>		
Average		1-3542 " "

Where the "average" is simply the arithmetical mean of the several fractions given above, it can hardly, I think, be accepted as the true average size, since as much weight is given in this mode of calculating to the rarer as to the more frequent forms. Accordingly it is not surprising that we find in a former paper³ measurements which do not accord very closely with this average: "Domestic dog, old mongrel, common diameter of corpuscles 1-4000th to 1-3200th of an inch." "Fox hound puppy, one day old, a bitch, 1-3000th, and 1-2666th, the most common diameter of the corpuscles." "Fox hound puppy, twelve days old, a bitch: most common diameter of the corpuscles 1-3000th and 1-2885th of an inch. Extreme sizes 1-4000th and 1-2666th." "Mongrel puppy, four months old, a bitch, all the following diameters common, viz.: 1-3693d, 1-3554th 1-3429th, and 1-3200th." The measurements for the second and third of these animals are about as much larger than those for the human species as the others are smaller.

It is interesting to know just how Mr. Gulliver's measurements were made. He tells us he used a glass eye-piece micrometer so adjusted that

¹ Appendix to Gerber's Elements, cited above, p. 1.

² Loc. cit., p. 38.

³ London and Edinburgh Philosophical Magazine, vol. xvi. (1840) p. 28.

the divisions had a value of 1-4000th of an inch each. "If one space and a quarter of this micrometer were occupied by a single globule, this would of course measure 1-3200th of an inch; if three equally-sized particles lying in a line, and touching at their edges, covered three spaces and a half, the diameter of each of these would be 1-3429th, if four spaces 1-3000th of an inch."¹ The objectives used were an eighth by Ross, and a tenth by Powell.² It is not stated whether these objectives were provided with the screw-collar adjustment for thickness of cover, but they probably were; and if so, doubtless all the measurements were somewhat vitiated, like others of the same date, by failure to allow for the variation in magnifying power produced by turning the screw-collar. Moreover, it must be clear, that practically the fractions of a division of the eye-piece micrometer were only *estimated*, for the case in which a number of "equally-sized" corpuscles would be found "lying in a line," and just "touching at their edges," without overlapping, must have been rare. As to the accuracy of the value assigned to the eye-piece micrometer, Mr. Gulliver himself says: "In the absolute accuracy of any micrometer applied to objects so extremely minute, it is difficult to place implicit confidence;" and he only claims "relative exactness" for his results.³

Turning now to the original essay of Welcker, we find that his observations give even less support than those of Gulliver to the notion that the blood of the dog can be distinguished from that of man by the microscope. Welcker's measurements, as ordinarily quoted in the text-books, are .00774 of a millimetre for man, and .0073 for the dog. I find, in his original paper,⁴ that the mean for the dog was derived from the measurement of but ten corpuscles in the blood of a single terrier; the variations in this case being, minimum .0065 mm., maximum, .0082 mm. Now, if we turn to the table⁵ of his own measurements of human blood, we find, that, in the last measurement of the blood of Dr. Schweigger-Seidel, fifty corpuscles gave the following results: mean, .00724 mm., minimum, .0051, maximum, .0085, in which case the mean is a trifle less than that found for the dog.

I would commend this table of Welcker's to the study of those who may be disposed to underrate the diversity of size which may be observed among the human red corpuscles; the minimum measurement recorded in it is .0045 mm., the maximum .0097 mm.; the author remarks: "I have always, both in animals and in man, found the transverse diameter of the blood-corpuscles of one and the same individual vary from one-fourth to one-half of the mean measurement; and it appears that all the sizes lying between the two extremes are present in tolerably equal numbers, with the

¹ Loc. cit., p. 24.² Loc. cit., p. 24 and p. 105.³ Loc. cit., p. 24.⁴ H. Welcker—Grösse, Zahl, Volum, Oberfläche und Farbe der Blutkörperchen, bei Menschen und bei Thieren. Zeitschrift für Rationelle Medizin, 3te R., Bd. xx. (1863) S. 257.⁵ Loc. cit., p. 263.

exception of the smallest corpuscles, which occur for the most part singly and at intervals.”

I may mention, further, that the mean dimensions of the human red corpuscles so often quoted from Welcker, viz., .00774 mm., with a minimum of .0064 mm., and a maximum of .0086, were not derived from the whole of this table, but from four sets of measurements of his own blood only, of which two were dry preparations and two from the moist blood. He tells us that he selected the mean .00774 mm. because it *was* derived from his own blood, which he had used in a previous research on the number of the blood-corpuscles, and thought best, therefore, to use also in the computation of their volume, which is one of the chief subjects discussed in his paper. The mean of eight other measurements from five different individuals was .00768 mm. The blood of a chlorotic woman gave .00656 mm., as the mean of the corpuscles examined moist, and .00693 mm., as their mean when examined dry.

Welcker made his measurements with Kellner's System III., Ocular II., magnifying about 620 diameters, and by a delicately ruled eye-piece micrometer, each division of which, with the power used, had a value of .001723 mm., as determined by the stage micrometer: “A human blood-corpuscle fell within four or five of these divisions, while, on account of the great delicacy of the ruling, fifths or even tenths of a division could be estimated with tolerable exactness.” The stage micrometer was a millimetre in one hundred parts, ruled by Lerebours, and which Welcker had verified by comparison with a standard scale in a manner which he describes in full, and which is worthy of study. He measured, as a rule, fifty blood-corpuscles from each sample, and these were not selected, but taken indiscriminately one after the other as they came under the scale while the specimen was being moved along.

Other observers besides Gulliver and Welcker have recorded minute differences in the average size of the red corpuscles of man and the dog. Thus Carl Schmidt¹ estimates the average diameter for man at .0077 mm., for the dog at .0070 mm. A. Kölliker² fixes the mean for man at .0033 of a Paris line (= .00751 mm.)—that for the dog at .0031 of a Paris line (= .00709 mm.). On the other hand, Friedberg³ makes the blood-corpuscles of the dog the largest, stating that he finds the human corpuscles measure from .0058 to .0070 mm.—those of the dog from .0054 to .0080.

For myself, after repeated measurements of the blood of the dog, and of human blood, I can only say that I find no constant difference between them, whether the fresh blood or thin layers dried on glass be selected for measurement. The mean of fifty corpuscles taken at hazard is seldom

¹ Op. cit.

² A Manual of Human Microscopic Anatomy. London, 1860., pp. 519 and 525.

³ Op. cit.

twice the same, and sometimes that of human blood, sometimes that of dogs' blood, is a trifle the largest.

The following measurements, intended to illustrate these facts, were made with a glass eye-piece micrometer ruled in two-hundred-and-fiftieths of an inch, and with such a magnifying power that each division corresponded to 1-50,000th part of an inch ($.0005079 + \text{mm.}$). The objectives used were an immersion 1-16th of Powell and Lealand, and an immersion No. 13 of Hartnack, either of which permitted the above value to be given to the divisions of the eye-piece micrometer by properly adjusting the draw-tube. The stage micrometer used in effecting this adjustment is an excellent one in 1-100ths and 1-1000ths of an English inch, in which the several hundredths and thousandths, as nearly as I can measure, are equal to each other, and the ten divisions of the latter value to any one division of the former—a quality in which the stage micrometers in the market are generally deficient. I have compared this micrometer with a standard scale ruled on silver—a centimetre in millimetres and tenths—the property of the United States Coast Survey, kindly loaned for this purpose by Mr. J. E. Hilgard, who assures me that it is “very accurate.” I made several comparisons, both by means of an eye-piece micrometer and by the contact method described by Welcker. These comparisons showed that the divisions of my stage micrometer were nearly two per cent. (exactly 1.945 per cent.) larger than they ought to be, and this correction was accordingly applied in adjusting the value of the eye-piece micrometer. The value assigned to the divisions of the eye-piece micrometer for these measurements cannot therefore, I think, differ from their absolute value by a quantity large enough to modify the results appreciably.

As the divisions represent a value twelve and a-half times less than that of the divisions of Mr. Gulliver's eye-piece micrometer, and more than three times less than those of Welcker's eye-piece micrometer, I did not find it necessary to estimate fractions of a division, as they did, but read the nearest number of whole divisions corresponding to each corpuscle. Fifty corpuscles, or about that number, were measured in each sample of blood. An assistant noted the number of eye-piece divisions corresponding to each corpuscle, as the measurements were made, and the mean was obtained in each case by adding together all the values and dividing by the number of corpuscles measured. Of course the number of eye-piece division found only required to be multiplied by two to convert it into decimals of an inch. I endeavoured at first to make these measurements with a dry Powell and Lealand's 1-50th of an inch, with the draw-tube so adjusted that each division of the eye-piece micrometer should equal one hundred thousandth of an inch, but I found the outline of the corpuscles, with this power, was not sharp enough to permit me to measure them as

exactly as I wished, and I therefore gave the preference to the immersion objectives above mentioned.

Of course, in arranging for these measurements the effect of the screw-collar adjustment of the objective on the magnifying power had to be taken into account. This was done in the following manner: Some thin glass covers, not varying more than a thousandth of an inch from .012 of an inch in thickness, were selected from a lot of so-called 1-200ths of an inch covers by means of a suitable lever of contact.¹ Some blood being placed under one of these covers, the best adjustment of the screw collar for definition was found by trial. The stage micrometer, which is an uncovered one, was then temporarily covered with another of the selected thin glasses, and, being duly focussed upon, the desired value was given to the divisions of the eye-piece micrometer by the adjustment of the draw-tube, after which the measurements were proceeded with, and the screw-collar was not turned again until they were completed.

The following tables present the several means deduced from these measurements, in decimals of an inch, to which, for convenience, I have added the equivalent values in decimals of a millimetre. The number of corpuscles from which each mean was deduced is also given. The measurements made with the Hartnack No. 13 immersion are marked (H), the others were made with Powell and Lealand's immersion 1-16th.

Measurements of Human Red Blood-Corpuscles, from Five Individuals.

			Number of corpuscles measured.	MEAN DIAMETER.	
				Decimals of an English inch.	Decimals of a millimetre.
1.	Dr. W., dry	.	50	.000304	.00772
2.	" " moist	.	49	.000292	.00742
3.	" " " (H.)	.	50	.000300	.00762
4.	" " " (H.)	.	50	.000289	.00734
5.	" McC., dry	.	50	.000288	.00731
6.	" " " "	.	50	.000294	.00747
7.	" " moist	.	50	.000301	.00765
8.	Mr. W., dry	.	50	.000298	.00757
9.	" " " (H.)	.	52	.000297	.00754
10.	" T. " "	.	50	.000290	.00737
11.	" " " (H.)	.	50	.000292	.00742
12.	" B. " "	.	50	.000296	.00752
13.	" " " (H.)	.	50	.000297	.00754

In each of these measurements of human blood, the great majority of the corpuscles ranged from twelve to seventeen divisions of the eye-piece micrometer—that is, from .00024 to .00034 of an inch. Out of the whole number measured, six were as small as ten divisions, and one as large as eighteen divisions; large and small forms were not searched for, however.

¹ The instrument used was made by Stackpole & Bro., of New York, after the pattern of the instrument designed by Mr. Ross, which is figured in Carpenter on the Microscope, 4th ed., London, 1868, p. 203.

The size most frequently measured was fifteen divisions, or .00030 of an inch.

Measurements of the Red Corpuscles of the Dog, from Five Individuals.

	Number of corpuscles measured.	MEAN DIAMETER.	
		Decimals of an English inch.	Decimals of a millimetre.
1. Mongrel terrier, dry . . .	50	.000292	.00742
2. Same animal " . . .	54	.000299	.00759
3. Another mongrel terrier, dry (H.)	50	.000290	.00737
4. Same animal, moist (H.) . .	50	.000288	.00731
5. Scotch terrier, " (H.) . .	50	.000291	.00739
6. Same animal, " (H.) . .	50	.000289	.00734
7. " " " (H.) . .	49	.000287	.00729
8. Spitz dog, dry (H.) . .	52	.000285	.00724
9. Black and tan, moist (H.) .	50	.000290	.00737

In each of these measurements of dog's blood, precisely as in the case of those of human blood, the great majority of the corpuscles measured from twelve to seventeen divisions of the eye-piece micrometer (.00024 to .00034 of an inch). Out of the whole number measured four were as small as ten divisions, but none larger than seventeen were encountered. As with the human blood, however, large and small forms were not searched for, but all the perfectly formed corpuscles brought into view by the movement of the stage were measured as they passed under the micrometer, without selection, until the required number was recorded. The size most frequently measured was fifteen divisions, or .00030 of an inch, precisely as in the case of human blood.

It will be observed that three of the above means for human blood, Nos. 1, 3, and 7, are a trifle larger than any of those of dog's blood, and two of the latter, Nos. 7 and 8, are a trifle smaller than any of those for human blood. All the other means for the dog are within the range of the values found for human blood, and the majority of them are each identical, even to the last decimal place, with some one of those found for man.

I may, moreover, remind the reader in this place, that the variations between the mean diameter assigned to human blood by different observers are quite as great as the variations recorded by any of them between the blood of man and the dog, or even greater. Passing by the older measurements, some of which, as a matter of curiosity, I have given in the footnote,¹ I may cite, besides the measurements of Gulliver .00794 mm.,

¹ A list of the more important of these older measurements will be found in the *Mensiones Micrometricæ* of R. Wagner (*Partium elementarium organorum que sunt in homine atque animalibus menciones micrometricæ*. Erlangen, 1834). Most of these are included in the more complete list given by Louis Mandl (*Mémoire sur les parties Microscopiques du Sang*, Paris, 1838, p. 10), from which I take the following, reducing the values which both Mandl and Wagner give in vulgar fractions of a Paris line to decimals of a millimetre. Leeuwenhoek (1673), .00902; *ib.* (1720), .01327. Jurin (1717), .00789; Tabor (1724), .00723; Senac (1749), .00820;

Welcker, .00744 mm., and Kölliker .00751 mm., which have been already quoted in this paper, the following values: Robin¹ .0073 mm., Harting .0074 mm., Valentin² .0071 mm., and Austin Flint, Jr.,³ .00726 mm. (1-3500th inch).

I have thus shown that we are not justified, either by the facts of the case, or by the authorities supposed to favour the possibility of doing so, in attempting to distinguish between the blood of man and that of the dog, by the measurement of their red corpuscles. Mr. Gulliver himself, indeed, appears to have come to a similar conclusion, not only with regard to the dog, but several other animals, for he tells us that the corpuscles of the quadrumana "differ but little from that of man, being only just appreciably, or sometimes not at all, smaller, both in the monkeys of the old and new continents," and that "in the seals, otters, and dogs, the corpuscles are about as large as in man."⁴

I myself have not made systematic measurements of the blood of any of these other animals, and am, therefore, unable to speak as authoritatively with regard to them as I can about the dog. From Mr. Gulliver's detailed measurements, appended to Gerber's Elements, however, I am led to believe that there are several other animals whose blood, even in the fresh state, could not be distinguished by the dimensions of the red corpuscles from that of man. Among the domestic animals I may especially mention the rabbit and the Guinea-pig as belonging to this category. To these, besides most of the monkeys of both old and new world, the seals, and the otters, we may add the kangaroo, the capybara, the wombat, and the porpoise. In the case of all these animals we not merely find that the "average size" calculated in Mr. Gulliver's peculiar way approximates dangerously to the average assigned to man, but the classic 1-3200th of an inch figures among the "common sizes" recorded by Mr. Gulliver for each.

The foregoing remarks and measurements refer especially to the fresh blood of the animals mentioned, and to thin layers quickly dried on glass, as is generally practised in making preparations of blood for permanent

Muys (1751), .01128; Weiss (1760), .01085; Della Torre (1763), .00301; Blumenbach (1789), .00789; Villar (1804), .00564; Sprengel (1810), .00902; Kater (1819), .00677; Bauer and Home (1818) .01504; Young (1819), .00451; Rudolphi (1821), .00902; Prevost and Dumas, (1821), .00705; Edwards (1826), .00814; Hodgkin (1827), .00902; Wollaston, (1827), .00525; Weber (1830), .00525; Müller (1834), .00525 to .00902; Schultz (1836), .00667 to .00836; Wagner (1838), .00645 to .00752—Mandl, himself, gives .00800.

¹ Charles Robin. Note sur quelques points de l'anatomie et de la physiologie des globules rouge du sang. Journal de la Physiologie, tom. i. (1858), p. 283.

² I cite the estimates of Harting and Valentin from Welcker's paper cited above, p. 258.

³ The Physiology of Man, vol. i. New York (1866), p. 111.

⁴ Proc. of the Zoolog. Soc., 1862, p. 96.

preservation. In such preparations the corpuscles have almost exactly the size they possess in the perfectly fresh blood. The great majority of Mr. Gulliver's measurements were made upon blood prepared by this method, and at the time he appears to have regarded the results as the equivalent of measurements made on perfectly fresh blood. "In some instances," he tells us, "there was certainly a slight enlargement in the dried corpuscles, as compared with those seen in their own serum immediately after they were taken from the animal. In the greater number of trials, however, the sizes of the wet and dry discs corresponded accurately."¹ Twenty years later he seems to have modified this opinion somewhat, for he states, that, when the corpuscles of man and other mammalia were dried on glass, however quickly, they were usually just appreciably larger than in the "*liquor sanguinis*."² Welcker also found that the mean dimension obtained by measuring the corpuscles dried in a thin layer was apt to be rather greater than that obtained from the measurement of moist blood, and explained it by stating that "the very smallest more spherical corpuscles spread out a little in drying." He regards the difference, however, as so trifling that he uses measurements of dried specimens indiscriminately with those of moist in obtaining his averages. I myself am not satisfied that there is any constant difference, and find, on comparing the mean diameter of fifty corpuscles dry with fifty moist from the same individual, that sometimes the one, sometimes the other is a trifle the largest. The dried corpuscles are very apt to be deformed, and often many of them are quite oval. If the long diameters of a number of such corpuscles are measured, the mean will be of course too great. I do not find it so if the measurement is confined, as it should be, to those corpuscles which have dried symmetrically and are quite circular.

How is it now with regard to blood dried *en masse*, when sprinkled upon weapons, clothing, wood, etc. Dr. Richardson admits in this case that a *slight* contraction takes place, but evidently regards it as too trifling to interfere with the diagnosis. Carl Schmidt, on the other hand, found that the blood-corpuscles under such circumstances contracted to nearly one-half their original size, and gives .0040 mm. as the mean diameter of the corpuscles of human blood thus prepared, while he assigns .0077 mm. as the mean of human corpuscles dried in thin layers on glass.³ It is not necessary for the purposes of the present paper to go into a detailed discussion of this question, for no one will pretend that it can be any easier to make the diagnosis of such stains than it is in the case of moist blood or of thin films dried on glass; and, if it is impossible in the latter case to ascertain by the microscope that the sample submitted

¹ Lond. and Edin. Philosophical Mag., vol. xvi. (1840), p. 25.

² Med. Times and Gazette, Aug. 1862, p. 158.

³ I quote from Fleming, op. cit., p. 111.

is human blood, it would be absurd to hope to do better in the former. I cannot, however, refrain from expressing my conviction that Carl Schmidt was quite as accurate in measuring his samples as Dr. Richardson in measuring his, and that the latter has underrated the variations in size which the dried corpuscles may present under various conditions.

I may also call attention in this connection to the effect of water on the diameter of the corpuscles. Mr. Gulliver has pointed out, that, if "water be mixed with blood, the discs immediately become much enlarged and spherical, quickly losing their colouring matter; and yet, if the whole of this be thus removed, after a while the outlines of the discs, very faint indeed, may frequently be recognized, diminished considerably in diameter and apparently quite flat." In another place he relates, that "some human corpuscles having an average diameter of 1-3429th of an inch, measured only 1-4800th of an inch after the whole of their colouring matter had been separated in this manner."² Suppose, now, the case of blood mixed with water and afterwards dried, as, for example, in the case of an unsuccessful attempt to wash away the blood while fresh?

In conclusion, then, if the microscopist, summoned as a scientific expert to examine a suspected blood stain, should succeed in soaking out the corpuscles in such a way as to enable him to recognize them to be circular discs, and to measure them, and should he then find their diameter comes within the limits possible for human blood, his duty, in the present state of our knowledge, is clear. He must, of course, in his evidence, present the facts as actually observed, but it is not justifiable for him to stop here. He has no right to conclude his testimony without making it clearly understood, by both judge and jury, that blood from the dog and several other animals would give stains possessing the same properties, and that neither by the microscope, nor by any other means yet known to science, can the expert determine that a given stain is composed of human blood, and could not have been derived from any other source. This course is imperatively demanded of him by common honesty, without which scientific experts may become more dangerous to society than the very criminals they are called upon to convict.

¹ Lond. and Edin. Phil. Mag., vol. xvi. (1840), p. 106.

² *Ib.*, vol. xxi. (1842), p. 108.

REVIEWS.

ART. XX.—*De la Fièvre Biliëuse Melanurique des Pays Chauds comparée avec la Fièvre Jaune. Etude Clinique faite au Sénégal.* Par L. J. B. BERENGER-FERAUD, Médecin-en-Chef de la Marine, etc. etc. 8vo. pp. 434. Paris: Adrien Delahaye, 1874.

The Melanuric Bilious Fever of Warm Climates compared with Yellow Fever. A Clinical Study of the Disease as observed in Senegambia. By L. J. B. BERENGER-FERAUD, etc. etc.

Hemorrhagic Malarial Fever. An address delivered before the Medical Society of North Carolina, at its 21st Annual Meeting. By Wm. A. B. NORCOM, M.D., President of the Society. Pamphlet. Raleigh, 1874.

Report on a New Variety of Malarial Fever. By T. C. OSBORN, M.D. The New Orleans Journal of Medicine, Oct. 1868.

Essay on Malignant Congestive Fever. By J. D. OSBORN, M.D. Ibid. January, 1869.

Hemorrhagic Malarial Fever. By R. F. MICHEL, M.D. Ibid. July, 1869.

Remarks on Malarial Hæmaturia. By S. F. STARLEY, M.D. Ibid. Oct. 1869.

Brief Account of an Epidemic of Jaundice. By Prof. L. S. JOYNES. The Richmond and Louisville Medical Journal, April, 1868.

Miasmatic Hæmaturia. By WILLIAM A. GREENE, M.D. Ibid. Feb. 1872.

Hæmaturia or Yellow Remittent. By EDWARD H. SHOLL, M.D. Medical and Surgical Reporter, Oct. 24, 1868.

Hemorrhagic Malarial Fever in Alabama. By E. D. M'DANIEL, M.D., of Camden, Ala. Reprinted from Transactions of the Medical Association of the State of Alabama, 1874, 8vo. pp. 27.

MANY of the Southern medical journals have during the last ten years contained descriptions of a disease which was unknown to most of those under whose observation it came. Its prominent and characteristic symptoms are jaundice, great irritability of the stomach, giving rise to uncontrollable vomiting, and a peculiar alteration in the colour of the urine, generally attributed by writers on the disease to the presence of blood. These have also with very few exceptions correctly regarded it as a manifestation of malarial poisoning; by some, however, it has been thought to be a modification of yellow fever. The admirable work of M. Berenger-Feraud will enable us, we think, to show not merely that the disease is not new, but also that the foreign body to which the urine really owes its remarkable appearance is bile, neither blood-corpuscles nor hæmatin being found in more than a very small proportion of the cases.

M. Berenger-Feraud's position as Médecin-en-Chef de la Marine, at once entitles him to consideration at our hands. In addition to this he seems to have enjoyed exceptional advantages for the study of the disease, having been for many years in charge of a hospital at Gorée which received annually into its wards from eleven to thirteen hundred patients, of

whom on an average from thirty-five to forty were affected with melanuric bilious fever. At a later period he was physician in chief of the colony of Senegambia and of its dependencies, a position which brought him in contact with every class in the community, and enabled him to see the disease under every variety of circumstances. He has in this way been able to collect notes of at least three hundred cases; a larger number probably than has passed under the observation of any other physician. Not only has he been careful to record all that throws light upon the pathology of the disease, but he has also spent much time and labour in rendering it clear that it has no connection of any kind with yellow fever. Debarred, as he was, by the remoteness of the colony in which he was stationed, from the use of libraries, his book will not be found to contain many references to other authors. It is based, as he says, upon the results of his own observations, and, regarded in this light, it is an exceedingly valuable contribution to the literature of the subject of which it treats.

Without further prelude, we shall at once proceed to consider M. Berenger-Feraud's definition of the disease. It is, he says, a malarial fever of variable type characterized by—1. Persistent vomiting of bilious matters of a greenish colour; 2. Jaundice of the skin and of all the tissues; 3. A peculiar brownish colour of the urine. The second and third of these characteristics are more pathognomonic than the first, and when both are present enable us readily to distinguish this form of malarial disease from every other.¹

M. Berenger-Feraud proposes a new name, Melanuric Bilious Fever, for this disease. He does this because the names hitherto applied to it are objectionable, since they imply either that it is a modification of yellow fever, or that the peculiar discolouration of the urine is due to an intermixture of blood. The name he has chosen, while it recognizes the malarial origin of the disease and the change in the urine, does not necessarily commit him to any theory in regard to the cause of the latter.

The second chapter of the book is devoted to the history of the disease. We have already intimated that our author was not disposed to look upon the disease as a new one. As the discussion into which he enters occupies nearly sixty pages of his work, we can adduce a few only of the many reasons which he gives for his opinion, which is sustained by the experience of several American physicians. Thus Dr. T. C. Osborn says:—

"Here and there, in the several locations I have taken, during the twenty-eight years of my professional career, it has occurred to me to see, now and then, after long intervals of time, isolated instances having the same general features and results, but, classing them together under the congestive form, I failed to recognize the important position, in the family of malarial fevers, to which they were unquestionably entitled."

Dr. A. G. Mabry² in a report on a case of this disease writes:—

"It is a mistake to suppose that this is a new form of disease. More than twenty-five years ago I treated, in the vicinity of Selma, cases of intermitting

¹ This disease must not be confounded with that described, among others, by Drs. Harley, Dickinson, Greenhow, Gull, and Pavy, and called by them intermittent or paroxysmal hæmaturia, or, more properly, hæmatinuria. The exciting cause of the latter seems to be exposure to cold, and it has been observed in individuals who have never visited malarious regions. Jaundice has occasionally occurred in hæmatinuria, but it is by no means so marked and constant a symptom as in melanuric bilious fever, and the same is true of irritability of the stomach, which seems scarcely to exist in the former disease.

² Transactions of the Medical Association of Alabama, 1870.

fever presenting, in a marked degree, all the symptoms characteristic of these cases at the present day."

A very similar opinion is expressed by Dr. E. D. M'Daniel, who quotes passages from the writings of Dr. James Copeland,¹ Dr. R. B. Todd,² M. Segaud,³ Dr. J. C. Guardia,⁴ Dr. J. C. Faget,⁵ and others, all of which sustain the position he takes.

We may add here in passing that a careful examination of the cases reported by Morehead⁶ has convinced us that two or three of them are really instances of this disease, although they are not so described by him. But to return to the arguments presented by M. Berenger-Feraud. He says, first, that the physical conditions of the country in Senegambia justify the belief that the disease has always existed, although undoubtedly it may have been more virulent at some times than at others. The writers who hold the opposite opinion assert that the action of the malarial poison is modified by the epidemic influence which produces yellow fever, and that, as a result of this modification, a hybrid disease is produced. In order to be able to decide this point, M. Berenger-Feraud consulted the records of the hospital at St. Louis, and, although these are not so full as might be wished, he thinks he has found sufficient evidence that the disease existed as early as 1820, long prior to the appearance of yellow fever in Senegambia. The records of the hospital at Gorée also afford corroborative evidence of the correctness of his view. Moreover, neither Dr. Thèze nor Dr. Loupy, both of whom practised in Senegambia about 1856, seem to have regarded it as new, since they described it among the endemic diseases of the country. The author's conclusions in reference to this point are as follows: 1. Melanuric bilious fever is endemic on the coast of Africa, and is a manifestation of malarial intoxication. 2. It not only does not arise from the same cause as yellow fever, but also is not the result of a modification by the epidemic influence causing the latter. If it has only been observed at certain times and in certain localities in Senegambia, this is simply because the European inhabitants are fortunately not at all times placed in conditions favourable for its development. It has, therefore, been observed to be especially frequent at times when expeditions were made into the interior of the country, and consequently into malarious districts. It is rarely seen in a European during the first year of his residence in the colony; it is more common in the second, and still more so during the third; but after this the liability to be attacked by it apparently diminishes. Thus of 100 cases, 5.4 will occur among residents of one year, 22.5 among those of two, 42.5 among those of three; while the tendency to it after the third year may be represented as 20 per cent. for the fourth year, and 4.8 per cent. for the fifth. This apparent immunity is explained by the fact that very few foreigners pass more than three years in Senegambia. Prolonged residence, therefore, does not diminish the liability to this disease; on the contrary, its victims are to be found among those who have suffered from repeated attacks of malarial disease, and in this point M. Berenger-Feraud's experience is confirmed by that of several physicians, resident in the Southern States of our own country, who have written on this disease and whose names head this notice. There is in this respect a marked difference between this disease and yellow fever, which when epidemic in a locality is especially prone to attack new-comers.

¹ Dictionary of Practical Medicine.

² London Med. Gaz., Jan. 19, 1849.

³ On the Climate and Maladies of Brazil, 1845.

⁴ Medicine through the Centuries.

⁵ New Orleans Journal of Medicine.

⁶ Clinical Researches on Disease in India, London, 1856.

It is also true that, while the former is endemic in parts of the country which have never been invaded by the latter, this has presented no deviation from its usual course when occurring in malarious districts.

The next chapter treats of the pathological anatomy of the disease. The author thus describes the appearances presented at the post-mortem examination in a typical case. The skin is uniformly yellow, and does not present, as in yellow fever, a more intense discolouration in some regions than in others. The depth of the colour depends, to some extent, upon the period at which the patient has succumbed to the attack, being more marked at first. There may be ecchymoses, but these are not so common as in yellow fever, and the effusions of blood into the muscles, so frequent in the latter disease, are not met with in this. The mucous membranes are not swollen, and there is no escape of blood from the anus, mouth, or nose. Nothing characteristic is found in the cranial cavity, and nothing beyond mere hypostatic congestion of the lungs in the thoracic. The stomach is full of a greenish liquid, either clear or similar in appearance to water in which spinach has been boiled, and entirely different in appearance from the material composing the black vomit, and is due simply to a reflux of bile. The mucous membrane of the stomach is healthy, being, however, of course, stained by bile. Other writers have described various morbid appearances, which M. Berenger-Ferand is sure are more correctly attributed to the effects of alcoholism; drunkards furnishing a large proportion of cases of this disease. The appearances alluded to consist in injection of the mucous membrane, disseminated ecchymoses, projection of the follicles, and opacity of the epithelium, lesions which are found in other diseases. The intestines are either healthy, or present no marked peculiarity. The liver, on the other hand, is often the seat of decided changes, being usually notably enlarged. Estimating the weight of the liver in health at 1.796 grammes, which is above that usually given, he finds its weight in this disease increased by from 200 to 1000 grammes. This increase is largely due to congestion, and the liver will therefore weigh much less after free incisions have been made into it. Its colour depends to some extent upon the stage at which death has occurred, being dark in cases that ended fatally in the early stage, and light in those that have lasted longer. Hence has arisen, the author says, the circumstance that some writers describe the liver as engorged with blood, and others as anæmic. The congestion is more marked in some parts than in others, and, consequently, the colour is not uniform. This gives the liver a marbled appearance. The blood which escapes from its cut surface is black, with a peculiar violet shade, due to the intermixture of bile. The liver feels hard to the touch, but its consistence is diminished. The gall-bladder is distended with a dark-coloured viscid bile, which stains the fingers like iodine. It is scarcely necessary to add that these are not the post-mortem appearances we meet with in yellow fever, in which the liver is of a pale-yellow colour, anæmic and dryish, and in which the gall-bladder contains a serous colorless or greenish liquid.

The spleen is almost always increased in size, weighing usually twice, and sometimes three times as much as usual. In the early stages of the disease it is almost diffuent; later it is hard. The kidneys are congested and their weight is also increased. Any alteration in structure which may have existed was not positively ascertained in consequence of the want of the necessary instruments to make a complete examination. There is reason to believe, however, that sometimes permanent injury is done to the kidneys by the fever. The character of the urine found in the bladder

varies with the stage of the disease. The blood contains bile in sufficiently large proportions to stain linen yellow when dipped into it.

The American physicians, to whose papers we have already referred, seem to have enjoyed very few opportunities for the study of the post-mortem appearances, but Dr. Michel's and Prof. Jones's examinations,¹ so far as they went, revealed the presence of almost identical lesions with those given above. They both speak of the congestion of the liver and of the distension of the gall-bladder with bile, upon which so much stress is laid by M. Berenger-Feraud. Prof. Joynes also alludes to the proofs found at the autopsy, that there has been a free secretion from the liver during life. In his own words, "bile is found *deluging the body.*" In the face of evidence such as this it can scarcely be longer maintained, as has been done by many physicians, that torpor of the liver is an important factor of this disease.

The author next passes to the consideration of the course the disease generally takes. We have already said that it selects its victims from among those who have repeatedly suffered from malarial fever. More than this, it very rarely occurs without premonition, since the melanuric paroxysm is generally preceded by others, and it is exceedingly important to be able to recognize it during the forming stage, when it may sometimes by proper treatment be averted. Unfortunately this can rarely be done with certainty. The first fully-formed paroxysm is ushered in by a chill, which is both of longer duration and of greater severity than usual, and this occurring where the disease is endemic, should at once awaken suspicion. During the intermission that follows the patient suffers from malaise and from a saburral condition of the *primæ viæ*. The second paroxysm occurs twenty-four hours after the first, and this is more severe, and is generally, but not invariably, accompanied by characteristic symptoms such as nausea, vomiting, cephalalgia, and melanuria. Sometimes, as this paroxysm is passing off, jaundice will be observed. The type of the disease may be intermittent, remittent, or continued. It may vary in degree to such an extent that M. Berenger-Feraud thinks it worth while to make four varieties: 1, mild; 2, severe; 3, grave; 4, *siderante* or pernicious. The type of the mild form is generally intermittent, that of the severe form, remittent, and that of the graver forms is continued; but this rule is by no means absolute, since a grave case may be of the intermittent type, and a mild case of the remittent. Since the difference between these four varieties is entirely one of degree, it will not be necessary to describe the symptoms of each variety in detail. In addition to jaundice, vomiting, and melanuria, the patients will generally complain of a feeling of weight and pain in the right hypochondrium, extending to the epigastrium and to the regions of the kidneys. The same regions are tender on pressure. Sometimes this pain is so great that it constitutes one of the principal features of the disease. The jaundice is uniform, and is very rapid in its appearance. Dr. J. D. Osborn says of it, that the nurse will very frequently be able to tell to a minute the time of its occurrence. Attention is generally called to the condition of the urine by the patient himself. Its colour varies usually from a light to a dark chestnut; it may be almost black in bad cases. Directly after excretion it is clear, containing neither deposit, nor mucus held in suspension. Afterwards its lower strata become muddy and a little grayish in colour. In severe cases, on the other hand, the urine, even when freshly passed, is turbid. Micturition

¹ Quoted by Norcom.

is easy. In the mild variety the quantity of urine is increased, as much as three quarts being sometimes passed during the first paroxysm.¹ In the severer forms, however, there is a diminution of the secretion, but this never amounts to true suppression. It foams readily upon agitation, is acid at time of emission, but rapidly becomes neutral, or even alkaline, when allowed to stand. It contains albumen in varying proportions, but its amount does not bear any fixed relation to the gravity of the attack. It occasionally also contains casts, and has usually a specific gravity of 1026. During the intermission the urine loses its colour, becoming like that secreted in anæmia. The tongue is large, pale, and covered with fur, which is thick and white, excepting when discoloured by the matters vomited. Thirst is often intense, but the patient fears to drink lest vomiting should be provoked by it. The matters first thrown up consist of articles of food, afterwards pure bile is vomited. This is at first yellowish-brown in colour, but later it becomes a porraceous green. It is clear in mild cases, imparting only a light-greenish stain to linen dipped into it, and contains little or no solid matter. In the severer forms, however, the ejecta contain particles of solid matter, green in colour. M. Berenger-Feraud insists strongly upon the fact that the colour of the vomited matters is always green, unless altered by something which has been taken into the stomach; having never seen anything which at all resembles black vomit, he does not believe that it ever occurs in this disease. Prof. Jos. Jones, on the contrary, asserts that it is occasionally observed, but unfortunately we can only quote him at second-hand, and do not know, therefore, whether or not his assertion rests upon microscopical examinations. In severe cases there is, in addition to the symptoms above detailed, distressing headache. This is never localized in the supra-orbital region, as in yellow fever, but is diffused and more confusive in character than the pain in that disease. In mild cases the bowels are not disturbed; in the severer forms diarrhoea of a bilious character may occur. At first the stools are fecal, especially if there has been constipation, but later they become liquid, and so closely resemble the urine that they cannot be distinguished from it, and have been thought, even by physicians, to contain blood. In very bad cases hicough is added to the other symptoms. It is usually distressing to the patient, and when it occurs, especially if accompanied by other nervous symptoms, it indicates great prostration, and generally a fatal termination of the case. American writers have described petechiæ and sanguineous discoloration of the liquid of blisters as of frequent occurrence in this disease. These the author has never seen, although he admits they have been observed by other physicians.

It will be noticed that in the foregoing description there is no allusion made to hemorrhage from the gums and nose, or from other mucous surfaces, and while all the writers in the American journals whom we have already quoted speak of this as happening very frequently, they report very few cases which sustain them in this statement. Thus, among the ten cases narrated by Dr. T. C. Osborn, it is recorded in only one. Since it is also mentioned that vibices were present, it is at least possible that

¹ Dr. S. F. Starley, after expressing the opinion that the disease is a congestive form of remittent fever, the stress of which is thrown upon the kidneys, writes as follows: "Certain it is that they are excited to greatly increased functional activity, for, coincidently with the hemorrhage, the quantity of urine secreted is largely above what I have ever known in any other condition of the system, unless it is when the kidneys take upon themselves the task of removing some large dropsical effusion."

the oozing of blood from the gums depended upon a depraved condition of the blood not wholly ascribable to this disease.

The duration of the disease varies greatly. In the pernicious form it may prove fatal in three days. In the other forms, when death occurs, it is longer delayed. Even in mild cases that do well it is about three weeks before convalescence is established, and in other cases it is much longer, being in bad cases as much as sixty-five days. The mode of termination of every case will depend, to a large extent, upon its severity, although the results of cases treated by quinia are of course more favourable than those treated without it.

In the mild form recovery almost invariably takes place; in the severe form the mortality may be estimated at 20 per cent.; in grave cases the chances of life and death are about even, in the remaining forms death is the rule.

Complications occurring in this disease may be divided into two classes: 1, those observed during the disease itself; and, 2, those observed during convalescence. Under the first head is to be included a paroxysm of the gravest forms, coming on suddenly and unexpectedly in the course of a mild attack. Convalescence is very apt to be interrupted by, 1, gastric derangements, such as indigestion, nausea, vomiting, etc.; or, 2, by those of the intestines, among which colic, constipation, and dysentery are the most frequent. In addition to these, hepatitis, erysipelas, and paralysis are mentioned as occasionally present. Amblyopia has been sometimes noticed, and is probably due simply to anæmia of the retina, or to some disorder of accommodation.

Relapses are frequent, and it is often impossible to assign any reasons for them, but it is certain that their liability to occur is in inverse proportion to the efficiency with which the quinia treatment has been carried out. Indeed the tendency to relapse is so great that M. Berenger-Feraud says that any one who has once suffered from the disease in a severe form had better leave the country, since a succeeding attack, which is almost certain to occur, will probably terminate fatally.

When speaking of the etiology of the disease, the author says statistics show that the largest number of cases occur in the most malarious regions or in districts having a luxuriant vegetation. High temperature favours vegetable decomposition, but further than this it seems to exert no influence. The disease is most frequent during those seasons when it is reasonable to suppose that malaria is most active. It is occasionally met with, it is true, during cold weather, but in these cases the patient is generally an old sufferer from malarial fevers, in whom there is a strong tendency to relapse which has been probably called into activity by exposure to an abrupt change of temperature, or perhaps by a change of residence. It is well known in this country that either of these causes will sometimes provoke a recurrence of intermittent fever. Entire freedom from all liability to the disease is possessed by no race. It is true that the native inhabitants of Senegambia rarely suffer in their own homes, but when removed from them they also succumb to its causes. This may, partly at least, explain the immunity from malarial disease which is claimed for the blacks in our Southern States; although it is only fair to add the existence of this immunity has been recently called into question. Among predisposing causes to the disease may be mentioned insufficient and unwholesome nourishment, which acts by enfeebling the individual and by diminishing his powers of resistance. The excessive use of alcohol is also a predisposing cause. Drunkards not only eat, as a general rule, insuffi-

ciently, but are sufferers in a larger proportion than others from affections of the liver, which, of course, gives malarial disease, when it exists, a tendency to this form rather than to any other. So frequent indeed is it to find the changes produced by alcohol at post-mortem examination of individuals who have died of this disease, that, as we have already said, alcoholic gastritis has been described as one of the lesions it produces. Sometimes alcohol appears to act as an exciting cause. "Nothing is more common in Senegambia than to see an individual who has been drunk for two days, presenting on the third the premonitory symptoms of the disease." In concluding his remarks upon etiology, the author says that melanuric bilious fever is the result of malarial intoxication, producing a marked polycholia, that the symptoms resemble those caused in animals by the injection of bile into the blood, and that malarial disease assumes this form partly at least because of the frequency of affections of the liver, or of a tendency to them which exists in hot climates.

If the disease be malarial in its origin, why has it been so infrequent in our Southern States until within the last ten years? This is a question which it is not easy to answer fully. Dr. Norcom attempts to do so as follows:—

"Before the war, the Southern States were in a high state of cultivation, and the lands thoroughly drained; hence the malignant forms of malarial disease as a general rule were not known, except in very low, badly drained swamp lands. Within the past eight years, owing to so much land lying waste, defective drainage, and the general unsanitary condition of the country, the malarial poison has acted with intense virulence, and caused the disease we are now considering. Since the prevalence of this disease we scarcely ever hear of the old algid pernicious fever."

A very similar opinion is expressed by Dr. Greene, while Dr. M'Daniel contends that it is due solely to increased virulence of the epidemic influence.

The diagnosis of this disease generally involves no difficulty. It rests mainly upon the recognition of the peculiar alterations in the colour of the urine. We have already described its microscopic characters so fully that it is not necessary to do this again. We shall, therefore, proceed at once to give the results of the chemical and macroscopical examination. Nitric acid will, in addition to coagulating any albumen which may exist in the urine, cause the evolution of carbonic acid in large quantities. The author has never succeeded in finding sugar. The colour of the urine has been supposed by the laity, and even by members of the profession, to be due to an intermixture of blood; indeed many writers assert that they have actually found blood-corpuscles under the microscope. Among these are Mr. Hogoulin, at Bourbon, M. Bories and M. Pellarin, all of whom the author quotes. The last-named gentleman says he never failed to find blood-disks, except when the urine was alkaline. Unfortunately American observers seem to have had recourse to the microscope in very few instances, but to have contented themselves with a simple inspection of the urine. Prof. N. F. Lupton, of the Southern University, states that it was found in two specimens submitted to him for examination, and hence Drs. T. C. Osborn and Michel, who quote him, conclude that it exists in every case.¹

¹ The following is Prof. Lupton's report of his examination of the urine: "In quantity the secretion rarely varied from a healthy standard, but all its other features were continually changing. At one time it would be a true hæmaturia with albuminous deposit, at another amber-coloured and full of dumb-bell crystals, beautifully distinct, and again limpid, with a splendid iridescent pellicle

M. Berenger-Feraud repeated M. Pellarin's experiments, using all the precautions which he recommends, in order to insure success, and although he was aided in his investigations by M. Tronette, *Pharmacien de la première classe*, and an accomplished chemist, utterly failed in finding anything else but epithelial cells and casts of the uriferous tubules. MM. Hognolin, Bories, and Pellarin are convinced that the colour of the urine is not due to the presence of bile, because no colour-tests are obtained when nitric or hydrochloric acid is added to it. The author believes, on the other hand, that the usual reactions with these acids are prevented by the albumen which the urine contains, and which must first be got rid of before bile can be detected. Inasmuch as his theory rests upon the presence of biliary colouring matters in the urine, we intend to give his method of proceeding in his own words. He chooses for his purpose urine freshly passed. It was very dark red, almost black in colour, resembling very dark Malaga wine.

"This urine," he says, "the specific gravity of which was 1020 at the time of emission, let fall almost immediately a grayish, flaky deposit, which became by degrees considerable in amount. The precipitate and the supernatant liquid examined repeatedly with the microscope never revealed the presence of blood-corpuscles. A portion of this urine treated with an equal volume of alcohol at 90°, gave an abundant precipitate. This was filtered and evaporated at a gentle heat until it was reduced to a very small bulk, when a blackish-brown substance was precipitated. This precipitate was collected on a filter, washed with water, and then treated with chloroform, which yielded, 1, a yellow liquid; 2, an insoluble substance. The chloroformic solution of yellow colour was then agitated with a solution of caustic soda, which deprived the chloroform of its yellow colour. An equal volume of alcohol at 90° was then added to the alkaline solution, which was then treated with concentrated nitroso-nitric acid, the effect of which was to produce at first a green colour, then blue, violet, dark red, and finally a dirty yellow. Another portion of the chloroformic solution, evaporated to dryness in a watchglass, yielded an amorphous orange-red substance, without a trace of crystallization, even when examined under the microscope; we therefore think ourselves justified," he says, "in asserting that our experiments have shown the presence of bilirubine.

floating upon the surface. When it was hæmaturic, *blood disks* and tube casts were more or less abundant in the field of the microscope, and albumen and clots would fall to the bottom of the vessel. I mention these particulars because several intelligent physicians have expressed doubts as to the bloody character of the secretion. Only once did the urine fail to redden litmus paper, and that was during the presence of the triple phosphates; it was then slightly alkaline. The specific gravity varied in the different specimens from 1010 to 1030, being highest in the hæmaturic, and lowest in the phosphatic. Sometimes the changes would follow each other in rapid succession during the day."

Since this review was in print Dr. J. M. Da Costa, Professor of Practice of Medicine in the Jefferson Medical College, has informed the writer that he has examined microscopically three specimens of urine presenting the characters described in the text, and in all of them detected abundance of blood-corpuscles. In two cases the specimens were sent to him from a distance, but were in a good state of preservation when examined; in the other case the patient, who had in other respects a typical attack of malarial fever, was under his own care in this city, although the disease had been contracted in Maryland. Nothing is more likely than that hemorrhage may occur from the kidneys, as a consequence of the congestion resulting from the increased functional activity of these organs in separating the bile from the blood. Indeed M. Berenger-Feraud admits this, contending, however, that, since blood was not detected in the numerous examinations he made, we must look farther for the cause of the discolouration of the urine. In fact, Dr. Lupton's expression that the blood disks were more or less abundant does not convey to our mind the impression that they were present in such quantities as to explain this most striking feature of the disease.

"The precipitate, which was insoluble in chloroform, dissolved readily in alcohol. It was soluble also in a solution of caustic soda and in aqua ammoniæ. The soda solution yielded with muriatic acid a yellowish-brown precipitate. The ammoniacal solution yielded, when treated with calcium chloride, a rusty-coloured precipitate."

These experiments prove, the author believes, the presence of bilifuscin.

"The presence of the biliary acids was recognized in the following manner: A certain quantity of urine was evaporated to a syrupy consistence, then treated with alcohol at 90°, and afterwards filtered. The portion passing through the filter was then again evaporated and treated with absolute alcohol. Again filtered, and the alcohol eliminated by means of heat, it was treated with a little water. Acetate of lead being added to this liquid, a precipitate was obtained, which, after being washed in a solution of sodium carbonate, was boiled for a long time. The liquid thus obtained was evaporated to dryness, and the residue treated with alcohol, which was afterwards evaporated. The substance left after evaporation was dissolved in water and submitted to Pettenkofer's test, when a magnificent violet colour was produced."

After having thus shown that the colour of the melanuric urine is due to the presence of biliary principles, M. Berenger-Ferand says that to make assurance doubly sure, he has added bile, taken from the body of an individual who died of this disease, to normal urine, with the effect of producing a liquid indistinguishable from melanuric urine. He adds, also, that, if the blood be treated with the same reagents, it will also be found to contain bile.

From these experiments the authors think the following conclusions established:—

1. The urine in melanuric bilious fever does not contain a trace of blood, and its very remarkable colour is due to the presence of a large quantity of biliary matters.¹

2. The colouring matters which it contains, and which give it a dark tint resembling Malaga wine or the infusion of coffee, are bilirubine, and bilifuscin, to which must be added the biliary acids.

3. Bile is also found in the blood as it leaves the liver.

The stools and vomited matters were also carefully examined and found to contain a notable quantity of bile.

The only diseases likely to be confounded with the one under notice are acute atrophy of the liver and yellow fever. In the former, which is a rare disease, there is an entire absence of fever; the pulse is slow rather than frequent. It has not, moreover, an intermittent or remittent character, and does not yield to quinia. Nitric and muriatic acids show the presence of bile in the urine, and there is diminution of the hepatic dulness. It is scarcely necessary to add that the post-mortem appearances in the two diseases are very different. We will not give the means by which we are enabled to make a differential diagnosis between melanuric bilious fever and yellow fever, although the author does this very fully and carefully. In the course of this review we have so frequently contrasted the symptoms of these diseases, that it would be superfluous to do it now.

Symptoms of evil omen are, a violent chill or syncope at the commence-

¹ The author adds, that upon his return to Europe, he submitted several specimens of melanuric urine to M. Bouchardat. This learned professor, whose attainments justly give weight to his opinions on scientific matters, and who possesses moreover unusual skill in the analysis of the urine, said, after the examination of the liquid, that the discolouration was due to the presence of bile, and that in a number of similar specimens which he had analyzed he had never found anything else but bile.

ment, and nervous symptoms of all kinds, such as jactitation and wild delirium. A very sudden, irregular, or delayed appearance of the jaundice is likewise unfavourable, as are also suppression of urine or great diminution in quantity, a persistence of the dark colour, constant vomiting, which continues in spite of remedies, intense lumbar pains, and hiccough. It must not be forgotten that occasionally fatal cases begin insidiously.

We arrive now at one of the most important subjects in the book, the treatment of the disease. From what has preceded, our readers must of course be aware that M. Berenger-Feraud regards the paroxysm of melanuric bilious fever as only differing from that of other forms of pernicious fever in the excessive secretion of bile, replacing the more usual sweating, or the choleraic discharges. Holding this view of the nature of the disease, it is not surprising that he should regard quinia as the sheet anchor in its treatment, and that he should look with disfavour upon all plans of treatment which have for their object the promotion of the secretion of bile. The symptoms are largely due to the absorption of bile, and this is very likely to be increased by anything which augments the quantity of bile in the intestines. Moreover, experience has shown him that while the jaundice is increased when mercury is administered, it is diminished under the use of quinia.

We intend now to present to our readers, in as few words as possible, the plan of treatment which this author recommends, and which long experience has shown him to be most useful. We shall afterwards review the methods which have been proposed by others, and especially by physicians in our Southern States.

Called to a case of the disease, in the forming stage, M. Berenger-Feraud, with the view of correcting the saburral condition of the stomach, administers either an evacuant, under which head are included emetics and cathartics, or an opiate. An emetic should only be used in first or very mild attacks, and if the patient have been in good health before it. Ipecac. is the best of all emetics; its action should be promoted by copious draughts of warm water. Its effect is, after it has itself ceased to act, to arrest the vomiting; once used, it is better not to recur to it. Since purgation is less distressing and debilitating than emesis, a cathartic is recommended in relapses and for feeble subjects. One not likely to nauseate should be chosen. He was first induced to try opiates in this condition by reading the memoir of Husson in the *Annuaire Médico-Chirurgical des Hôpitaux et Hospices de Paris*, in which reference is made to the use of this drug by Hernandez in large doses—four grammes of the wine of opium daily—at the beginning of bilious fever, for the purpose of arresting the vomiting. The dose recommended is large, and inasmuch as death in one case was ascribed to it by Husson, the author prescribes the *siròp de diacorde*—a preparation not materially differing from paregoric, to be taken as follows: Thirty or forty grammes are to be mixed with a hundred grammes of water. Of this a tablespoonful is to be given every hour. When thus administered sleep will be induced before the patient will have taken a poisonous dose of the drug. He has used this prescription more than three hundred times in various conditions, in which there was hepatic and gastric disorder, and has always found it beneficial; in fact he is convinced that it is quite as efficacious as an emetic, and vastly more agreeable to the patient. In the fever under consideration, his success has not been quite so remarkable, but still sufficiently great to justify him in recommending the treatment most cordially to the notice of the profession. He seems to use the opiate or an emetic indifferently, and

indeed sometimes gives them in the same case. He says, however, that his experience leads him to advise the use of the former as the rule, and that of the latter as the exception, simply because, in hot climates, it is necessary to avoid debilitating remedies. A still further objection to the emetic is, that it is likely to increase the already existing irritation of the stomach.

As soon as the vomiting has been checked and the fever moderated, or, in other words, as soon as possible, the patient should be placed under the influence of quinia. This should always be given in solution, and to insure its retention by the stomach, a few drops of laudanum should be added to it. If the medicine is rejected, it should be immediately repeated, and if again rejected, it should be given by the rectum, which, according to Briquet, absorbs it more readily than does the stomach. The author also speaks well of the hypodermic administration of quinia, although he has never so employed it. He condemns its application to blistered surfaces as useless. The dose, when given by the mouth, should be from two to two and a half grammes; this is to be followed in from three to twelve hours by a gramme in two doses. A gramme or more, in proportion to the severity of the case, is to be given next day, and to be continued daily until the disease is cured.

Certain symptoms are so prominent that it will be necessary to address remedies especially to them. Such a one is vomiting. When opium or an emetic fails to arrest this, recourse may be had in turn to cherry-laurel water, essence of peppermint, effervescing lemonade, champagne, ice, and hot drinks, although to none of these does the author attribute any positive curative power. In some cases, in which every other means fail, he has seen good result from the administration of teaspoonfuls of water given every minute. In others it will be necessary to give the stomach entire rest, and to give food, which must consist of milk and nourishing broths, as well as medicine, by the rectum. The pains in the loins and in the region of the liver are often distressing, and are best relieved by emollient cataplasms and by embrocations with sweet oil. Blisters have been used for this purpose, but when applied to the back vastly increased the sufferings of the patient. The adynamic condition which succeeds the fever requires the continuance of the quinia, which may be given in smaller quantities, care being taken to forestall the tendency to relapse by giving it in full doses on every seventh day. But it should never be replaced by the wine of bark, which is a preparation of uncertain strength, and which contains so much alcohol as to be objectionable on that account; many of the soldiers regarding it as a more agreeable "bitter" than can be purchased at the sutler's.

In his hands, and in those of M. Bourgarel, the plan of treatment just detailed has been eminently successful, M. Bourgarel having had eighteen successive cases all ending in recovery. The same treatment has been adopted in this country and notably by Dr. Norcom, and with very similar results. "I have treated," this gentleman says, "eleven cases of this disease, ten of which recovered. My first case, the one that died, sank from pure exhaustion within an hour after I first saw her." He gives somewhat larger doses of quinia, and substitutes for the opium by the month, from $\frac{1}{4}$ to $\frac{1}{3}$ of a grain of acetate of morphia administered hypodermically, claiming for it the power of checking the vomiting in a wonderfully short space of time. No other plan of treatment has been attended by anything like the same amount of success, and it appears to us the most rational that has been proposed, because it is directed against the cause of the disease, and not against an effect of it. But it is by no means

generally followed, our southern brethren, with very few exceptions, regarding it as necessary to institute some preliminary treatment before bringing the patient under the influence of quinia. Calomel, therefore, still continues to be given, and with two objects in view—1st, as a purgative; 2d, as an alterative. To fulfil the first indication it has been given in very large doses, from 20 to 30 grains. As an alterative it has been prescribed in divided doses, in some cases continued until salivation is produced; in others it is not pushed so far. M. Berenger-Feraud objects to either use of calomel. As a purgative its action may be excessive, and, therefore, debilitating to the patient. In smaller doses it is, he thinks, an irritant to the liver, which ought to prevent its use by prudent physicians in tropical countries. The stomatitis produced by it is, moreover, very inconvenient, interfering very decidedly with the nutrition of the patient, and demanding very often a large share of the physician's attention. The author's objections to the use of mercury are, however, based on better grounds than mere theoretical objections. In looking over the records of the hospital at Gorée, he found that next to compound fractures the condition that caused the retention of patients the longest was syphilis, and that after this came hepatitis. He found, moreover, that a large proportion of patients suffering from hepatitis had previously been treated for syphilis, and that under these circumstances the disease was very apt to terminate in suppuration. He has also observed that the former disease is very apt to follow any other disease that has been treated with mercury, he therefore avoids this remedy if the patient must remain in the colony after his convalescence. The author's researches have likewise convinced him that patients treated with it are just as likely as any others, and perhaps more than others, to suffer from relapse, a fact which proves that it has no real influence over the disease.

These objections are not altogether of recent origin. When speaking of the treatment of fevers, Twining¹ tells us that the use of mercury must be abandoned if the enlargement of the spleen supervenes, and in another part of his book says that the benefit of salivation is problematical. Morehead² is even more decided in his condemnation of the remedy. "Full doses of calomel," he says, "and the free use of purgatives form no part of the treatment of remittent fever with jaundice. On the contrary, they are likely to cause aggravation of the symptoms and to hurry on the period of prostration." He refers to the experiments of Dr. Murray upon dogs as proving that calomel exercises an irritant action on the gastro-intestinal mucous membrane, and asserts that many of the effects of calomel have been described as symptoms of the disease. "For these reasons," he continues, "I am of opinion that an endeavour to induce mercurial influence in remittent fever is erroneous in theory and of no value in practice." We might multiply quotations still further, but shall content ourselves with mentioning, as authors holding very similar views to those of Twining and Morehead, the following: Copeland,³ Robert Jackson,⁴ Geddes⁵, and in more recent times Maclean.⁶ Much difference of opinion exists among southern physicians as to the propriety of giving opium in this disease. Thus, while we find Dr. Starley agreeing with Dr. Norcom that it is a

¹ Disease of Bengal. Calcutta, 1835, pp. 452 and 479.

² Clinical Researches on Diseases in India. London, 1856, vol. i. p. 197.

³ Medical Dictionary, vol. i. p. 928.

⁴ Sketch of the History and Cure of Febrile Diseases, 1817, p. 243.

⁵ Clinical Illustrations of the Diseases of India.

⁶ Reynolds's System of Medicine, vol. i. p. 80.

useful remedy, Drs. Michel and T. C. Osborn condemn it as likely to do harm. Astringents have of course been recommended by those who believe that the alteration of the urine depends upon hæmaturia, but they are, it is needless to say, not indicated if it is due to an admixture of bile. Diuretics are recommended by Dr. J. D. Osborn to relieve the supposed congestion of the kidneys.

We have little to add in the way of criticism of M. Berenger-Feraud's views of the pathology of this disease. These rest upon observations and experiments which we feel sure were carefully made, and must therefore, it seems to us, be accepted, until they are shown by further observation to be incorrect. It is easier, indeed, to understand that hemorrhage should take place from the kidneys during the paroxysms than that the bile which is secreted in excess at this time should be immediately absorbed and excreted with the urine. But no theory can stand if opposed to facts, and we must therefore temporarily at least abandon that which assumes the existence of hæmaturia in this disease. It gives us pleasure to add, that at least one American physician suggested long before the publication of this work that the discolouration of the urine might be due to the presence of bile. "It appears to me, however," Prof. Joyues writes, "very improbable that the red colour of the urine was due to admixture of blood, as there is no mention of hemorrhage from any other organ than the kidney. That the mere presence of the colouring principle of the bile may render the urine red is in fact well known."

M. Berenger-Feraud deserves the thanks of the profession. Working in a country where the climate renders all exercise of the intellect difficult, and cut off from all books of reference, he has nevertheless produced a book which is one of the best of the kind we are acquainted with.

J. H. H.

ART XXI.—*The Physiology of Man; designed to represent the existing State of Physiological Science, as applied to the Functions of the Human Body.* By AUSTIN FLINT, Jr., M.D., Professor of Physiology and Physiological Anatomy in the Bellevue Hospital Medical College, New York; Physician to the Bellevue Hospital, etc. etc. etc. In five volumes. Vol. V. (with a general index to the five volumes). Special Senses; Generation. 8vo. pp. 517. New York: D. Appleton & Co., 1874.

THIS is the fifth and concluding volume of the physiological work upon which Prof. Austin Flint, Jr., has been engaged during the past eleven years. The first volume appeared in 1866, the second in 1867, the third in 1870, and the fourth in 1872. As they were issued, we presented from time to time, in the pages of this Journal, a brief analysis of their contents. We propose to perform the same task for the present volume, in which, in a compass of 463 pages, are discussed the special senses and the function of reproduction. The remaining 54 pages are wholly taken up with two indices, a special one for the volume itself, and a general one for the entire work.

Chapter I. is devoted to a general consideration of the special senses, and a particular account of the sense of touch. Though, in view of the well-known researches of Dr. Brown-Séquard, Dr. Flint recognizes the possibility of impressions of touch, titillation, temperature, and pain

being conveyed from the periphery to the centres by special and distinct fibres, he, nevertheless, is inclined to believe that all these impressions are, in reality, conducted by the nerves of general sensibility. With regard to the so-called muscular sense, which enables us to appreciate weight, resistance, etc., he thinks it depends, to a great extent, if not entirely, upon the muscular nerves, and that we can separate the muscular sense from the various modifications of general sensibility. The conductors of the muscular sense decussate in the medulla oblongata, while the conductors of the impressions of touch, titillation, pain, and temperature cross each other in the cord. The phenomena exhibited in cases of locomotor ataxia seem to show, however, that without the guiding influence of general sensibility, there could be no distinct perception of muscular action.

The olfactory nerves and the function of olfaction are considered in the second chapter of the work before us. Our author's account of the properties and functions of the olfactory nerves is preceded by a brief description of the physiological anatomy of the apparatus of smell, in which he has, for the most part, followed Sappey and Kölliker. Magendie denied that the function of the olfactory nerves was to administer to the sense of smell, and Bernard reported a case in the human subject, in which it was supposed that the olfactory sense existed notwithstanding congenital absence of the olfactory nerves and ganglia. Notwithstanding this, and although the filaments coming from the olfactory bulbs, and distributed to the Schneiderian mucous membrane, have not been exposed and operated upon in living animals, we are, nevertheless, in possession of many facts derived from comparative anatomy and pathological and clinical observations as well as from experimental research, which leave little doubt as to the mechanism of olfaction.

"Among the numerous experiments upon the higher orders of animals, in which the olfactory nerves have been divided, we may cite, as open to no objections, those of Vulpian and Philipaux, on dogs. It is well known that the sense of smell is usually very acute in these animals. Upon dividing or extirpating the olfactory bulbs, 'after the animal had completely recovered, it was deprived of food for thirty-six or forty-eight hours; then in its absence, a piece of cooked meat was concealed in a corner of the laboratory. Animals successfully operated upon, then taken into the laboratory, never found the bait; and nevertheless, care had been taken to select hunting dogs.'"

"Comparative anatomy shows that the olfactory bulbs are generally developed in proportion to the acuteness of the sense of smell. Pathological facts also show, in the human subject, that impairment or loss of the olfactory sense is coincident with injury or destruction of these ganglia. A large number of cases observed by Schneider, Rolfinck, Eschricht, Fahner, Valentin, Rosenmüller, Cerutti, and Pressat, between the years 1600 and 1837, are cited by Longet, in his elaborate treatise on the nervous system, in which the sense of smell was lost or impaired from injury to the olfactory nerves.² A case, reported by Hare, in 1821, showed total loss of smell from a disorder of the bones of the head. In this case an examination was made after death, and 'the ethmoid (sieve-like) bone, which is naturally furnished with numerous minute openings for the transmission of branches of the olfactory nerves to the nose, was altogether condensed, and its openings obliterated; the two primordial trunks of the olfactory nerves, instead of exhibiting their usual ramifica-

¹ Vulpian, *Leçons sur la physiologie générale et comparée du système nerveux*, Paris, 1866, p. 882, note.

² Longet, *Anatomie et physiologie du système nerveux*, Paris, 1842, tome ii. p. 38.

tions, being suddenly blunted at their extensions from the substance of the brain; plainly showing, that all their branches essential to the sense of smell had been completely destroyed by the diseased bone." This case is interesting as showing complete loss of smell after obliteration of the filaments passing through the cribriform plate of the ethmoid, to which, as we have stated, the term olfactory nerves properly belongs.

"In addition to the instances just cited, a large number of cases of anosmia have been lately reported, which fully confirm the view that the olfactory nerves are the true and the only nerves of smell. Notta gives the histories, more or less complete, of twenty-four cases of this kind.² Dr. Ogle reports nine cases.³ In nearly all of the cases on record, the general sensibility of the nostrils was not affected. In 1864 we had an opportunity of examining the following very remarkable case of gunshot wound of the head, in which, among other injuries, the sense of smell was destroyed:—

"The patient was a soldier, twenty-three years of age, who was shot through the head with a rifle-ball. May 3, 1863. The ball entered on the left side, $1\frac{1}{4}$ inch behind and $\frac{3}{4}$ of an inch below the outer canthus of the eye, emerging at nearly the corresponding point on the opposite side. Small pieces of bone were discharged from time to time for three months from openings in the posterior nares and the throat. He was examined May 10, 1864; when the wounds had healed, with falling in of the face over the left malar and nasal bones. He had then entirely lost the power of distinguishing odours. Upon applying acetic acid to the nostrils, he stated that he felt a prickling sensation, but no odour. Dilute ammonia produced a warm sensation. Chloroform gave no sensation. He had no sensation from the emanations of flowers. There was loss of general sensibility of the nasal mucous membrane on the left side, with diminished sensibility on the right side. He had a sensation, not very definite, when in water-closets, where (as he was told) the odour was very offensive, but experienced no sensation unless the emanations were very powerful. Before entering the army, he was a photographer by trade, and was familiar with the odours of acetic acid and ammonia. In this case, it is almost certain that the olfactory nerves had been divided, though other injuries undoubtedly existed."

Odorous emanations drawn up into the nasal passages come in contact with the olfactory portion of the Schneiderian mucous membrane, are absorbed, and make an impression upon the terminal filaments of the olfactory nerves. The impression conducted to the brain is appreciated as an odour, without affecting the sensory nerves, and it does not seem to make much difference whether the emanations pass from without inwards or from within outwards, provided they come fully in contact with the membrane.

The next four chapters are occupied with a detailed account of the anatomy and physiology of the eye. Dr. Flint, after describing the precise origin of the optic nerves in the brain and the course of the four sets of fibres in the optic commissure, expresses his belief that from the left side of the encephalon visual fibres pass to the right eye, supplying the inner mathematical half of the retina from a vertical line passing through the macula lutea, which is the line of division of the visual field

¹ Hare, *A View of the Structure, Functions, and Disorders of the Stomach and Alimentary Organs*, London, 1821, p. 145.

² Notta, *Recherches sur la perte de l'odorat*.—*Archives Générales de Médecine*, Paris, Avril, 1870, p. 385.

³ Ogle, *Anosmia; or Cases illustrating the Physiology and Pathology of the Sense of Smell*.—*Medico-Chirurgical Transactions*, London, 1870, Second Series, vol. xxxvii. p. 263. In his remarks upon the physiology of olfaction, Dr. Ogle advances the hypothesis that the sense of smell is acute in proportion to the development of pigment. He cites the remarks of Darwin on its absence or impairment in albino animals, the extraordinary development of the sense in certain of the dark-skinned races, etc.; but the facts adduced seem hardly sufficient to warrant the adoption of such a theory.

and not the point of entrance of the optic nerve. Visual fibres also pass to the left eye, supplying the outer half of the retina beginning at the macula lutea. Thus the outer half of the left and the inner half of the right retina are supplied by fibres from the left side; and the outer half of the right and inner half of the left retina are supplied from the right side. This conclusion as to the decussating fibres of the optic nerves is mainly based upon cases of hemiopia, in which, along with hemiplegia indicating brain diseases, insensibility to light was manifested and simultaneously in the outer half of one retina, and the inner half of the other. We have long suspected and so taught that some such arrangement as here indicated must exist, from several curious cases, which at different times have been under our care. One of these, a gentleman of much intelligence, addicted to severe study and of sedentary habits, suffered at irregular intervals with attacks of gastric embarrassment, nausea, and obstinate constipation, accompanied with severe frontal pain, confined sometimes to the left and sometimes to the right side of the head—though most commonly to the left. On one occasion while suffering from such an attack with nausea and severe pain in the left temporal region, he looked from the window of his house to a large sign opposite, on which was painted in large gilt letters, on a black ground, the name Henderson. He was so placed at the window as to be directly opposite the middle of the sign. To his astonishment he could not see the letters Hen at all, the letter d was distinct, e and r had disappeared, the s was rather hazy or indistinct, while the letters o and n were quite plainly seen. On moving to the left some distance the letters H and e came distinctly into view, n was faintly seen, d disappeared, e and r came into view, s was very indistinct, while o and n had altogether disappeared. Active vomiting terminated this derangement of vision after it had lasted about eight or ten hours.

Dr. Flint's description of the anatomy of the eyeball is largely based upon the observations of Sappey, Todd and Bowman, Donders, Helmholtz, Schnltze, Zenker, Kölliker, and others of less note who have contributed more or less to this field of inquiry. In the iris he recognizes the existence of radiating as well as circular muscular fibres, remarking that the presence of the former explains certain of the phenomena of dilatation of the iris, which would otherwise be difficult to understand. The nerves of the iris he describes simply as the long ciliary from the fifth cranial, and the short ciliary from the ophthalmic ganglion, without entering into any detail as to their final distribution—a subject of great moment, as is evident from the fact that the movements of the iris are governed though the intervention of these nerves by the tubercular quadrigemina on the one hand, and the inferior cilio-spinal centre on the other. In his description of the retina our author recognizes, as is ordinarily done, eight distinct layers, viz. :—

“ 1. An external layer, situated next the choroid, called Jacob's membrane, the bacillar membrane, or the layer of rods and cones. 2. The external granule-layer. 3. The inter-granule layer (cone-fibre plexus, of Hülke). 4. The internal granule-layer. 5. The granular layer. 6. The layer of nerve-cells (ganglion-layer). 7. The expansion of the fibres of the optic nerve. 8. The limiting membrane.”

His account of the connection between the rods and cones and the ganglionic cells is essentially a description of the schematic illustrations of Kölliker, which accompany the text, and according to which the filaments from the bases of the rods and cones while passing inward present in their course the corpuscles which constitute the granule layers, and

finally become continuous with the poles of the ganglionic cells. Each of the latter in turn sends one filament to the layer formed by the expansion of the optic nerve, which is continuous with a nerve fibre.

In chapter fourth the eye is considered as an optical instrument. Our author here treats of the theories of light and colour, of the laws of refraction and dispersion as they bear upon the physiology of vision, of refraction as accomplished by the cornea and crystalline lens, of spherical and chromatic aberration and colour blindness, of the area of distinct vision, the formation of images in the eye, and astigmatism.

It has long been known that the eye is far from being optically perfect. In the telescope and compound microscope the lenses are accurately centered, a condition absolutely essential to the perfection of these instruments. In the human eye, on the contrary, the refracting media are so arranged, that the visual line, instead of coinciding with the mathematical axis of the cornea, deviates from it horizontally from 2° to 8° , and vertically from 1° to 3° , and yet distinct vision is not practically affected.

"The field, or area of distinct vision, is quite restricted; but, were it larger, it is probable that the mind would become confused with the extent and variety of the impressions, and that we should be unable so easily to observe minute details and fix the attention upon small objects.

"While we see certain objects with absolute distinctness in a restricted field, the angle of vision is very wide, and rays of light are admitted from an area equal nearly to the half of a sphere. Such a provision is eminently well adapted to our requirements. We direct the eyes to a particular point and see a certain object distinctly, getting the advantage of an image in the two eyes exactly at the points of distinct vision; the rays coming from without the area of distinct vision are received upon different portions of the surface of the retina and produce an impression more or less indistinct, not interfering with the observation of the particular object to which the attention is for the moment directed; but even while looking intently at any object, the attention may be attracted by another object of an unusual character, which might, for example, convey an idea of danger, and the point of distinct vision can be turned in its direction. Thus, while we see distinctly but few objects at one time, the area of indistinct vision is immense; and our attention may be readily directed to unexpected or unusual objects that may come within any portion of the field of view. The small extent of the area of distinct vision, especially for near objects, may be readily appreciated if we watch a person attentively reading a book, when the eyes will be seen to follow the lines from one side of the page to the other with perfect regularity. When we consider that, in addition to these remarkable qualities, which are never thought of in artificial optical instruments, the eye may be accommodated at will, with the most exquisite nicety, to vision at different distances, and that we possess correct appreciation of form, etc., by the use of the two eyes, it is evident that the organ of vision gains rather than loses in comparison with the most perfect instruments that ever have been, or probably ever will be constructed."

Concerning the appreciation of different colours by the retina, our author says:—

"It is almost useless, with our present knowledge, to speculate with regard to the probable mechanism of the appreciation of colours in vision. The facts just stated are sufficiently clear, showing that the number of ethereal vibrations is different for different colours; but it is by no means determined that differences in the amplitude of the vibrations are in direct relation with the arrangement of the disks of the rods and cones in different portions of the retina. The curious phenomena of colour-blindness depend upon an abnormal

¹ Zenker, Versuch einer Theorie der Farben-Perception.—*Archiv für Mikroskopische Anatomie*, Bonn, 1867, Bd. iii., S. 248, et seq. In this article, Zenker proposes the theory of the perception of colours referred to above; but, as far as

condition of the visual apparatus. Persons possessing this peculiarity—called sometimes Daltonism, after the celebrated English chemist who described this infirmity as it existed in his own person—though vision may be normal in other respects, cannot distinguish certain colours, will mistake red for green, etc., and some can only distinguish black and white. It is a curious fact, also, that persons affected with colour-blindness (Daltonism achromatopsia) are sometimes incapable of discriminating musical tones. This was noted in numerous instances by Dr. Pliny Earle.¹ Though often congenital and irremediable, it is now known that colour-blindness is sometimes produced by the excessive use of alcohol and tobacco, exposure to cold and wet, etc., and is amenable to treatment.²

The formation of images in the eye, the manner in which the rays of light emitted from visible objects are refracted as they pass to the retina by the cornea, aqueous humour, crystalline lens, and vitreous humour, and the phenomenon of astigmatism, are all briefly but lucidly considered, and in entire accordance with the well-known views advocated by Helmholtz, Donders, Listing, and others, whose researches have done so much for the elucidation of these subjects.

With regard to the formation of images in the eye, it was long ago shown by Magendie, and still more recently by Volkmann and Helmholtz, that such images are in reality inverted. This being the case, the question has been long and hotly debated as to why we see objects in the erect position. Dr. Flint in alluding to this subject cuts the Gordian knot, it appears to us, in the following very summary and unphilosophical manner:—

“We shall allude briefly, in this connection, to a question which has long engaged the attention of physiologists, and one which, we cannot but think, has been made the subject of much unprofitable speculation.’ It is a matter of positive demonstration that the images of objects seen are inverted as they appear upon the retina. Why is it, however, that objects are appreciated as erect, when their images are thus inverted? With a knowledge of the fact that the appreciation of impressions made upon the nerves of special sense is capable of education and is corrected by experience, it seems hardly necessary to enter into an elaborate discussion of this point. We appreciate with accuracy the density of objects, the direction of sounds, differences in musical tones, the taste of sapid substances, odours, etc., as the result, to a great degree, of education. In the same way, probably, we acquire the power of noting the position of objects in vision; but even this supposition is not necessary to explain the phenomenon of direct vision by means of inverted images. The following paragraph, quoted from Giraud-Teulon, is a simple expression of facts, and shows the absurdity of the elaborate theoretical explanations made by many of the earlier writers:—

“If the objects seen mark their image upon the retina, each one in a proper

we know, this has not been unreservedly adopted by any writers upon physiological optics, though it must be admitted to be the only theory of colour-perception that approaches a satisfactory explanation of this most difficult question. We are by no means prepared to deny *in toto* the proposition that the perception of colour is a question of situation, different colours being appreciated by different portions of the retina; and some of the facts with relation to colour-blindness are favourable to this view; still, to render this certain, it is necessary to establish a very exact relation between the length of the waves of light of different colours and the diameter and number of the disks of the sensitive elements of the retina. For a very fair and full discussion of this theory, the reader is referred to the admirable compendium of Kaiser. (*Compendium der Physiologischen Optik*, Wiesbaden, 1872, S. 151, *et seq.*)

¹ Earle, On the Inability to Distinguish Colours.—*American Journal of the Medical Sciences*, Philadelphia, 1845, New Series, vol. ix. p. 351.

² Derby, Colour-blindness, and its Acquisition through the Abuse of Alcohol and Tobacco.—*New York Medical Journal*, 1871, vol. xiii. p. 284, *et seq.*

secondary axis; if, on the other hand, the retina appreciates these, *independently of ourselves*, in these same secondary axes, which all cross at the same point, it is evident that an exact or *erect* sensation, as well as the object which produces it, should necessarily correspond to an inverted or reversed image. But it is neither habit, education, nor information derived from the sense of touch, that enables us, as it is said, to see objects *erect* by means of *reversed images*. The retina sees or localizes objects where they are; that is what we call *erect*. If the picture be reversed, it is a mere matter of geometry.¹

"In discussing the same question, Helmholtz says that 'our natural consciousness is completely ignorant even of the existence of the retina and of the formation of images; how should it know anything of the position of images formed upon it?'"²

In response to this method of dealing with the question we might well ask whether the choroid coat has nothing to do with this phenomenon, whether it is merely, as the author says on p. 91, "a dark membrane for the absorption of light, preventing confusion of vision from reflection within the eye." Is Dr. Flint quite sure that the primary impression is made on the retina and not on the choroid coat? "The layer of rods and cones," he cautiously says on p. 69, "is *supposed* (the italics are our own) to be the portion which receives visual impressions." Singularly enough, he makes no allusion, as he might well have done, to the beautiful labours in this connection of his distinguished cotemporary and fellow-townsmen, the elder Prof. Draper, who, in his most philosophically conceived treatise on the "Course and Condition of the Life of Man," has given cogent reasons for supposing that the images of visible objects are in reality primarily received upon the choroid, that the action of vision really commences here through molecular change, and that the image is secondarily impressed upon the layer of rods and cones of the retina, and then transmitted by the optic filaments to the brain where the impression is consciously perceived. If this be the case, and much can be said in favour of this view, does the retina look forward and "see or localize objects where they are?" as Giraud-Teulon asserts, or does it not, on the contrary, look backward not at objects, but simply their images, by this simple act alone correcting lateral inversion at least? Still further, we may ask, instead of images as such, are not molecular disturbances set up first in the choroid, perhaps, and then in the layer of rods and cones, with which the internal surface of the choroid is in contact, and then propagated to the optic filaments, and by these conveyed to the quadrigeminal bodies? If the brain perceives and appreciates a peculiar molecular disturbance, rather than an image so-called; what matters it whether "our natural consciousness is completely ignorant even of the existence of the retina, and of the formation and position of images?"

The movements of the iris under the direct stimulus of light, and under the influence of the nervous system, and the accommodation of the eye to vision at different distances, are specially considered in Chapter V. It is now pretty well established, notwithstanding the conflicting results arrived at by different experimenters, that the circular muscular fibres, or sphincter of the iris, are animated exclusively by filaments coming through the ciliary nerves from the ophthalmic or lenticular ganglion, these being originally derived from the motor oculi communis, or third cranial nerve. The radiating and dilating muscular fibres, on the

¹ Giraud-Teulon, *La Vision Binoculaire*.—*Revue des Cours Scientifiques*, Paris, 1867-1868, tome v. p. 223

² Helmholtz, *Optique Physiologique*, Paris, 1867, p. 771.

contrary, are under the direct control of sympathetic filaments, which appear to originate, however, according to the researches of Budge and Waller, in the spinal cord below the sixth cervical nerve, in what they denominate the inferior cilio-spinal centre, and then joining the fifth cranial nerve near the Gasserian ganglion, pass to the iris. The iris is therefore controlled by two centres: the corpora quadrigemina governing the reflex contraction of the pupil due to the natural stimulus—light; the excitator or afferent nerves being the optic or second pair, and the motor being the third pair; while the dilatation of the pupil, most probably direct, though this is denied by Chauveau, is under the control of the upper part of the cord. It is well known that the pupil is contracted during accommodation of the eye for near objects, and it was at one time supposed that this diminution in the size of the pupil was the cause of the accommodation. This, however, is not the case, for the iris has been known to be paralyzed or even wholly destroyed, as in cases cited by Helmholtz and Von Graefe, without affecting the power of accommodation. When the eye is directed to distant objects the parts are passive, when near objects are to be examined, the ciliary muscle contracts voluntarily, the convexities of the lens are consequently increased, and as an accessory, but not essential, phenomenon, the pupil is contracted. In the attempt to examine minute objects carefully, the diminished size of the pupil is a considerable aid, for the object becomes more distinct by this restriction in the area of vision. Looking at a point through a pin-hole in a card at a distance less than five inches, or, in other words, less than the ordinarily shortest range of distinct vision, causes the point to appear magnified, in consequence partly of its unusual nearness, and partly from the cutting off of superfluous rays of light. It is a familiar fact that myopic persons, on this account, can see minute details with extraordinary distinctness at a very short range.

Although accommodation is physiologically produced by alterations in the convexities of the lens, it has been shown within the past few years, by some of the German ophthalmologists, that accommodation is possible in the absence of the lens. The following very interesting case illustrative of this fact, was described by Dr Edward G. Loring, Jr, of New York, in 1869, and is now, for the first time, published.

“In the spring of 1869, Miss E. W., eighteen years of age consulted me for the purpose of procuring suitable glasses. Five years before, when she was between twelve and thirteen years old, both eyes had been operated upon for cataract by the method of discission. After the absorption of the lenses had been completed, she was furnished with two pairs of glasses, one for the distance and the other for near work. Immediately after this, she went to California, and, shortly after going on board ship, she lost the glasses intended for near work, and had to rely entirely on her glasses for the distance. This pair had now become very much worn, and she simply wished to have them accurately measured, and a new pair made precisely like them. I found them to be convex, three and a half inch focus; and, with these glasses, vision was a little better than two-thirds of the normal standard.

“To my surprise, the patient then picked up a newspaper, and, pushing this back and forth, as persons ordinarily do who are trying glasses, remarked that she could see perfectly well, quite as well, in fact, as with the old pair. This drew my attention more particularly to the case, and the result of a more critical examination was as follows:—

“With $+ \frac{1}{3\frac{1}{2}}$, the patient read with either eye fluently Snellen, XXX., and was able, with both eyes, to pick out most of the letters of XX. at twenty feet. She could read No. X. at ten feet, and No. V. at five feet.

“With the same glass, and with no change of position on the nose, she read

No. I. $\frac{1}{2}$ Snellen fluently, holding the book naturally at twelve inches, which was about the distance at which she usually read. The book was then gradually withdrawn, the patient reading aloud while this was done. It was found that twenty-one and a half inches was the greatest distance at which No. I. $\frac{1}{2}$ Snellen could be read. She read No. I. Jaeger at twenty inches. The book was then advanced inch by inch, the patient reading aloud, till the book was within five inches of the eye. Inside of this, reading became impossible. These experiments were tried over and over again by myself, and were finally repeated in the presence of a brother oculist. This would give the patient an adaptability of the eye for different distances from twenty feet (or parallel rays) to five inches; or, in other words, an accommodation of $\frac{1}{2}$ ($\Delta = \frac{1}{2}$), and a relative accommodation for the very finest print from twenty inches to five ($\Delta = \frac{1}{6\frac{1}{2}}$). My own range, measured at the same time, was from twenty to five inches (vision being, in my left eye, exceptionally large, $\frac{2}{3}$).

"A careful examination of the pupils showed that they were of the normal size, as were the movements of the iris in every respect. With the ophthalmoscope, the pupillary space was found in the right eye to be entirely free from any remains of capsule, while, in the left, a narrow rim of the whitened membrane just encroached on the upper pupillary margin, but not to such a degree as to limit the size of the pupil, and thus to act as a diaphragm. The media of the eye were perfectly clear, and the ophthalmoscopic appearances were normal in every respect.

"The patient promised to return, for the purpose of having the reflections of the cornea measured by the optometer, and the fact determined by the ophthalmoscope, whether, under accommodative efforts, the eyeball became elongated. This she failed to do, and the case, as stated above, was shortly after reported to the New York Ophthalmological Society, April 12, 1869, and, in July, 1870, to the American Ophthalmological Society. In the index of the transactions of the American Ophthalmological Society for that year, it appears as a case of 'Apparent Accommodation in a Lensless Eye.' The paper, however, does not appear in the text, having been withdrawn at the last moment, as there were hopes that another examination could be obtained, and the cause of the accommodation of the eye be definitely settled.

"Two years later, Prof. Förster published a series of similar cases¹ under the title of 'Accommodative Power in Aphakia.' The present case, however, differs from those reported by Förster, in the fact that the range of accommodation was $\frac{1}{12\frac{1}{2}}$ larger than the maximum of any of his cases, and, from the very important fact that, whenever, in any of his cases, vision, both for the far and near, was taken, different glasses were used. In this case, the same glasses were used, worn in the same position, for all distances, from infinity up to five inches from the eye. So, too, in Woinow's² series of cases, the range of accommodation was taken only for the near, and amounted, on the average, to $\frac{1}{20}$.

"The only case which I know of that bears a close resemblance to the one above stated was reported by Arlt.³ In this case, a young man, with convex $\frac{1}{31\frac{1}{2}}$, could read both at six and at twenty-four inches, and could recognize the hands of a steeple-clock at a distance of more than five hundred paces with the same glass; but, as neither the size of the print nor that of the clock is given, no accurate conclusions can be drawn from the case.

"The case observed by me would then appear to be the first—as it is certainly the most remarkable—subjected to the recognized standard test of vision. Here the amount of accommodation was equal to that of a normal eye in a young person; and it would seem impossible that the ability to read the finest print at five inches, even taking into consideration the magnifying power of the

¹ Förster, Accommodations-Vermögen bei Aphakie. — *Klinische Monatsblätter für Augenheilkunde*, Erlangen, 1872, Bd. x., S. 39.

² Woinow, Das Accommodations-Vermögen bei Aphakie. — *Archiv für Ophthalmologie*, Berlin, 1873, Bd. xix., S. 167, et seq.

³ Arlt, Die Krankheiten des Auges, Prag, 1858, Bd. ii., S. 348.

glass, could be due to the overcoming of the circles of dispersion, as is claimed by the great majority of physiologists.

"Förster's views and the correctness of his tests have been objected to latterly by the following writers, cited by Woinow, viz., Donders, Mannhardt, Coert, and Abadie. Woinow, *op. cit.*—*Archiv für Augenheilkunde*, Berlin, 1873, Bd. xix., S. 108.

"Woinow, on the other hand, while he thinks that, in the normal eye, accommodation is performed solely by the lens, believes that some aphakial eyes acquire accommodative power, which is necessarily brought about through the agency of four factors; namely, the cornea, the vitreous, the action of the ciliary muscle and its effect on the bottom of the eye, and, finally, the effect of the external muscles of the globe. Woinow eliminates, from this group, the cornea, while Förster makes it the chief, if not the sole agent. In two cases, Woinow was able to observe the reflections from the anterior surface of the vitreous humour, which, in the absence of the lens, was convex, as was shown by the image being upright. These reflections were too weak to be measured by the optometer; but they were seen to become smaller when efforts were made to see at close distances.

"It is to be regretted, and it certainly appears a little strange, that, in neither Förster's nor Woinow's cases, was either the optometer or ophthalmoscope used in the elucidation of this problem. But, while Woinow's cases are, as he himself says, not conclusive, yet they seem, like Arlt's, Förster's, and the one just related, to substantiate the view that occasionally a considerable, if not a large degree of accommodation may exist, even in a lensless eye."

Binocular vision, corresponding points, the horopter, appreciation of the distance and form of objects, mechanism of the stereoscope, binocular fusion of colours, duration of luminous impressions, irradiation, movements of the eyeball, action of the muscles of the eyeball and the eyelids, and the anatomy and physiology of the lachrymal apparatus constitute the subject-matter of the sixth chapter.

The subject of audition is elaborately dissensed in Chapters VII., VIII., and IX., comprising nearly one-fifth of the whole volume. In his account of the topographical anatomy of the ear, Dr. Flint has particularly availed himself of the labours upon this subject of Sappey, Rüdinger, Lucæ, Schwartze, Tröltzsch, Kessel, Toynbee, Green and others, and he has judiciously illustrated this part of his work with several wood-cuts taken from the works of Sappey, Quain, and Rüdinger, and showing the various parts of the organ of hearing in a general view, the bones of the tympanum, and their exact position, and the bony labyrinth.

After sketching the general anatomical arrangement of the auditory apparatus, our author, as an introduction to the physiology of audition, appropriates an entire chapter to the physics of sound. In this chapter he considers the laws of sonorous vibrations, reflection and refraction of sound, noise and musical sounds, intensity, pitch, and quality of musical sounds, mechanism of the siren, musical scale, harmonics, resultant and summation tones, harmony, discord, and consonance. The facts and principles here presented are compiled from the well-known labours, in this field of research, of Tyndall and Helmholtz.

The view of our author as to the functions of different parts of the ear, is exhibited in the following summary of the mechanism of audition:—

"The waves of sound are simply collected by the pavilion of the ear, and are conveyed, through the external meatus, to the membrana tympani. The membrana tympani, a delicate, rounded, concave membrane, receives these waves and is thrown into vibration.

"The arrangement of the bones and muscles of the middle ear admits of variations in the tension of the membrana tympani. By increasing the tension of this membrane, the ear may be rendered insensible to grave sounds, while

high-pitched sounds become more intense; and, in cases of voluntary tension, the limit of perception of high tones may be greatly increased. The *membrana tympani* obeys the laws of consonance and vibrates strongly under the influence of sounds in unison or in harmony with its fundamental tone, returning, in this way, not only the pitch, but the quality of tones and combinations of tones in harmony. Destruction of the membrane does not necessarily of itself destroy hearing, or even the appreciation of tones, for the impressions may be conducted to the cochlea by the chain of ossicles.

The arrangement of the ossicles and muscles of the middle ear is such that contraction of the tensor tympani renders the articulations firm, tightens the little ligaments, and presses the stapes against the liquid of the labyrinth, so that the chain resembles, in its action, a solid and continuous bony rod. By this arrangement, the sonorous vibrations are conducted to the labyrinth with very little loss of intensity.

The cavity of the tympanum is filled with air, communicates with the mastoid cells, and with the pharynx by means of the Eustachian tube; and, by this means, the pressure of air in its interior is regulated. The labyrinth, consisting of the vestibule, semicircular canals, and cochlea, is filled with liquid, and the different cavities communicate with each other. The vibrations, repeated by the *membrana tympani*, are conveyed by the chain of bones to the liquid of the labyrinth, and by it to the terminal filaments of the auditory nerves.

The vestibule and semicircular canals seem to possess much less importance in the appreciation of sound than the cochlea. In the cochlea, throughout the entire extent of the spiral canal, is the organ of Corti, presenting, among other structures, about 8700 rods, varying in length, called the rods of Corti. But little is known of the anatomical relations between the auditory nerves and the organ of Corti; still, it is thought, as a matter of pure theory, that the rods of Corti are tuned in unison with different tones, that they repeat the tones conveyed to the cochlea, and that we are thus enabled to distinguish the different tones in music.

We have no very definite knowledge of the functions of the cells of the organ of Corti, of the otoliths, and of various other structures in the auditory apparatus. Sounds may be conducted to the auditory nerves through the bones of the head and the Eustachian tube, as is shown by the simple and familiar experiment of placing a tuning-fork in vibration in contact with the head or between the teeth."

Chapter X. treats of the sense of taste or gustation. Since 1831 many facts both pathological and experimental have been accumulated, tending to show that the *chorda tympani* branch of the facial nerve is, in all probability, the nerve of taste for the anterior two-thirds of the tongue. In 1831 Mentant explained the loss of taste in a case of facial paralysis, by referring it to an affection of the *chorda tympani*. Since then other cases of deep facial palsy, involving the *chorda tympani*, have been observed, in which there was loss of taste in the anterior two-thirds of the tongue, without any disturbance of tactile sensibility. In 1858 Bernard showed that section of the *chorda tympani*, or of the facial behind it, abolished the sense of taste in the anterior two-thirds of the tongue on the injured side. This experimental result was subsequently confirmed by Schiff and Lusanna. These two observers have also reported cases of disease of the fifth pair of nerves, in which, while the sense of taste was preserved, the general sensibility of the tongue was destroyed. These facts, which have been so long known, have led to the idea that the filaments of the *chorda tympani* which join the lingual branch of the fifth pair to be distributed to the anterior part of the mucous membrane of the tongue, constitute the nerve of taste for this region, instead of the filaments derived from the fifth. But the question here arises, does the *chorda-tympani*

govern the sense of taste directly, as our author maintains, or, as Bernard supposes, only intermediately, through its actions upon the salivary glands? And further, has the spheno-palatine ganglion, as Schiff contends, anything to do with the function of gustation. Notwithstanding the isolated experiments of Prevost upon this latter point, which seem to negative the views of Schiff, and notwithstanding the laboured investigations which have been undertaken upon this subject, it is evident that still other observations and experiments are necessary for its thorough elucidation. Another point of great interest in this connection also remains to be cleared up. When we recall the fact that the senses of sight, hearing, and smell are governed by nerves of special sense, it certainly seems to be a curious anomaly that the sense of taste should, in part, be under the influence of one of the great motor nerves of the head. We have yet to learn whether the filaments of the chorda-tympani which join the lingual, are traceable into the nerve of Wrisberg, and whether the encephalic origin of this nerve is different from that of the facial. If so, it is evident that the physiological anomaly referred to is apparent only, and not real. For in that case, the nerve of Wrisberg would evidently come to be regarded as a special nerve of gustation. Upon all these points, however, our author has nothing new to offer us. With regard to the sense of taste in the posterior part of the tongue, it is well known, since the experiments of Panizza, in 1830, and of Valentin, in 1839, that this is supplied by a nerve of general sensibility, the glosso-pharyngeal.

The function of reproduction is treated at some length in the next four chapters. In his sketch of the general and minute anatomy of the organs of generation in the male and female, our author has availed himself of the labours mainly of Luschka, Koster, Waldeyer, Schrön, Kölliker, Wernich, Leopold, Lott, Frankenhaenser, Budge, Klein, and Kraus, among the German writers; of Sappey, Ronget, Claparède, Pouchet, Giralès, La Vallette St. George, and Duplay, among French authors; and of the English writers Quain and Lee.

Spontaneous generation is briefly dwelt upon in Chap. XI., while Chap. XII., XIV., XV., XVI., XVII., and XVIII. contain a full account of the ovum, of ovulation, fecundation, the segmentation of the vitellus, and formation of the membranes and placenta, and the development of the embryo. The topics discussed in the concluding chapter are the enlargement of the uterus in pregnancy, duration of pregnancy, multiple pregnancy, cause of the first contractions of the uterus in normal parturition, the phenomena of foetal life, development after birth, and death.

We have thus, as fully as our limits would permit, given an account of the contents of the volume now before us. Though it contains no new facts, and manifests originality in neither the conceptions and theories advanced, nor in the arrangement of the topics of which it treats, it is, nevertheless, in many respects, a judicious compilation, quite up to the present state of our knowledge concerning the physiology of the senses and generation, and can, therefore, be recommended to the medical student as a useful aid in prosecuting his physiological studies. This, however, cannot now be said of the earlier volumes of Dr. Flint's work, written several years ago; all of them need careful and extensive revision, to bring them fully up to the existing state of physiological science. The first volume especially is now altogether inadequate to the wants of the physiological student. This, however, can be easily remedied in a second edition of the work, which we have no doubt will soon be called for. Our

author has it in his power to make the next edition of his work a very useful guide to the practitioner and student, by re-writing various portions of the first four volumes, by avoiding needless repetitions, by giving less space to mere controversial discussions as to claims of originality, and by omitting the details of experimental procedures, which, though eminently appropriate in a practical manual for the physiological laboratory, such as that of Burdon Sanderson, are certainly not in the case of a treatise which claims to be an exposition simply of the present state of the science of human physiology.

In conclusion, we cannot avoid the reflection that a well-digested text-book of physiology adapted to the wants of the advanced student, is still a desideratum in American scientific literature. It is a curious fact that of all the text-books upon this subject at present employed in our medical schools, that of Prof. Carpenter, which is now in its seventh edition, still comes the nearest to meeting this want, on account of the copiousness of its details, and the elaborate and systematic manner in which the whole science of human physiology is presented. Other British manuals, such as Kirke's, Marshall's, and Hughes Bennett's, are inferior to it, we think, not only in comprehensiveness, but also in the logical precision and connectedness with which the details are treated. In 1832 the late Prof. Samuel Jackson published in Philadelphia "The Principles of Medicine founded on the Structure and Functions of the Animal Organism." Though all the copies of this work were speedily sold, a second edition was never issued. The physiological treatise of the late Prof. Dunglison, also published in Philadelphia in 1832, was, for a long time, the leading text-book on physiology in our schools, and the only one which could compete with the work of Prof. Carpenter. In 1856 it had reached its eighth edition. Few, if any, American medical works have had a more extensive sale. Though no longer so widely employed, it is still a useful addition to the library of the physiologist, on account of its very extensive references not only to classical works upon physiology, but also to many less well-known monographs and memoirs on physiological subjects. Prof. Draper's "Human Physiology," published nearly twenty years ago, though written in the beautiful style and philosophical spirit so eminently characteristic of all this distinguished writer's productions, never enjoyed, as far as we are aware, much patronage. Certainly it is not now used to any extent in our medical colleges. Prof. Dalton's treatise is well written, but is so meagre in its details that it is better adapted to the requirements of "first course" students than to those more advanced. Many subjects of much interest and importance are not alluded to in its pages. It also requires thorough revision to maintain its popularity. From these statements it is evident that in the English language there is no work that can compare with Milne Edwards's exhaustive treatise on biological science, of which ten volumes have thus far been published. It is, in truth, such a library of biology in itself, that a well-executed translation of it would prove of great value to the medical student.

The complaint is sometimes made that the sale of American reprints of foreign medical works interferes with that of indigenous productions. If the foreign books upon any subject are more meritorious than those of our own country, the preference for them is naturally and rightly exercised. For science is cosmopolitan, and the student consults his own interest and that of science at large by supplying himself with the most useful text-books, no matter what may be their nationality.

J. A. M.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*Therapeutics and Materia Medica. A Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History.* By ALFRED STILLÉ, M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania, Physician to St. Joseph's Hospital, etc. etc. Fourth edition, thoroughly revised and enlarged, in 2 vols. 8vo. pp. 968-976. Philadelphia: Henry C. Lea, 1874.

THE demand for a fourth edition of Dr. Stillé's elaborate and comprehensive work on therapeutics and materia medica is alike complimentary to the author who produced it and to the public that have called for it. When the work first appeared we expressed our high appreciation of it. The verdict of the medical profession on both sides of the Atlantic has been given with remarkable unanimity in its favour. Its position as an authority in all matters pertaining to the subject of which it treats has long since been secured. The present demand for a new edition attests the permanent value of the work more satisfactorily than any notice or criticism can do.

We learn from the author's preface that he has carefully revised the whole work, and has added to it in this edition about two hundred and fifty pages of new matter. We have noticed that lithium and petroleum have been introduced into the first volume, and that chloral, croton chloral, bichloride of methylene, methylic ether, nitrite of amyl, gelsemine, veratria, and bromide of ammonium, have been introduced into the second volume. The articles on nux vomica, digitalis, conium, cinchona, the bromides, transfusion, and electricity, have either been re-written or largely added to. A postscript at the end of the second volume calls attention to Nélaton's method of averting the fatal result that sometimes follows the inhalation of chloroform. We have known that method to succeed in one or two cases when death was imminent after chloroform inhalation, and, therefore, can commend it; but good as that method is, a better one is to avoid the necessity of employing it by never using chloroform to produce anæsthesia.

These volumes form, in reality, an encyclopædia of materia medica, and no medical library can be called well furnished that is without them. The publisher deserves much credit for the excellent style in which he has presented them to the profession.

E. H. C.

ART. XXIII.—*A Practical Treatise on the Diseases of Women.* By T. GAILLARD THOMAS, M.D., Professor of Obstetrics and Diseases of Women and Children in the College of Physicians and Surgeons, New York, etc. etc. Fourth edition, thoroughly revised. With one hundred and eighty-six illustrations on wood. 8vo. pp. 801. Philadelphia: Henry C. Lea, 1874.

Good, better, best! might have been one's successive exclamations in reference to the first three editions of this well-known work. And now comes the fourth

edition, quickly following the third, tempting the rhetorical crime of a double superlative to characterize its superior merits.

Not only at home but abroad has there been a recognition of the great value of "Thomas on Diseases of Women," as shown by the fact of its translation into German, and preparations being made for translating it into French and into Italian.

The statement in the title indicating the thorough revision of the present edition is fully and strictly true. Indeed we have been surprised at the completeness of the revision, embracing improved instruction in many places, the rejection of some old, and the substitution of many new illustrations, and also the very form and words of many sentences, improving them in conciseness and clearness.

A detailed review of course is neither designed nor appropriate, nor indeed is it intended to point out all the alterations and improvements of this volume. We shall refer to a few salient points furnishing occasion for hearty commendation, or possibly some for at least a difference of opinion, if not for controversy.

The fifth chapter—fifth in both the third and fourth editions—is upon *rupture of the perineum*, and it is a great improvement upon the corresponding one in previous edition. Especially are we glad to see that Dr. Thomas has had the good taste and the scientific accuracy to remove that unhappy woman—Fig. 32 of the third edition—of Mr. Baker Brown's, with the three ghastly quadrangles which were supposed to represent the freshened surfaces necessary to be made in perineorrhaphy—a woman that has done duty so many years in so many text books and monographs. Elsewhere¹ we have ventured to utter a remonstrance against the anatomical absurdity and cruel injustice of this illustration, and we are thankful that our great American author upon diseases of women has thrown it aside.

In the course of the chapter Dr. Thomas, after describing the quill suture, remarks:—

"What appears to me a better method than this, for employing this form of suture, is one which has been extensively used by Mr. James Lane, of London, Dr. J. H. Thompson, of Washington, and myself. Whether priority belongs to Mr. Lane or Dr. Thompson I cannot say. The former has employed it since 1860. It consists in replacing the quills by little rods of ivory (Lane) or hard rubber (Thompson), perforated by three or four holes through which sutures are passed and secured. Both operators employ silver sutures instead of silk. Dr. Thompson secures the sutures by perforated shot; Mr. Lane secures them by some method which he does not mention in the account which I have seen describing his operation. Mr. Lane reports thirty cases thus treated, in not one of which he failed to obtain complete cure."

Mr. Bryant² recommends a perforated metal bar, though in some of his reported cases the sutures were simply secured by perforated shot. It is true that Mr. Lane in 1865 refers to his having used perforated "ivory bars," not rods, for five years. But, really, there can be no question of priority in the use of bars between Mr. Lane and Dr. Thompson as Dr. Thomas suggests, for as early as November, 1855, Dr. T. H. Tanner³ published cases of perineorrhaphy where metallic bars drilled for the passing of sutures were used, these bars having been furnished by Mr. Caesar Hawkins, while shot in securing sutures are probably similar to the bead suture used by Mr. Charles Brooke in such operations many years before.

¹ American Practitioner, 1873.

² Holmes's System of Surgery.

³ Lancet, 1855.

The chapter on *vaginismus* also shows important changes and improvements, though one cannot be complimentary as to the wood-cut on p. 142, of the pubo-coccygeus muscle, a muscle which Dr. Thomas, adopting the teaching of Savage, states to be the vaginal sphincter.

On p. 165, in considering *methods for evacuating retained menstrual fluid*, Dr. Thomas asserts that Bernutz believed the admission of air into a uterus previously closed to its entrance causes contractions which force imprisoned blood into the peritoneum, and refers to volume one of the *Clinique Médicale sur les Maladies des Femmes*. Referring to it we do not find a single word indicating that Bernutz regards the entrance of air as inducing uterine contractions, and it is not uterine contractions in themselves, but tubal, which he regards as the great peril. Let any one read the following from Bernutz, and then reconcile it, if possible, with the statement of Thomas:—

“Je proposerais d'opérer huit à dix jours après l'époque menstruelle, au moment où le calme incomplet qui lui succède est bien confirmé et en même temps à une époque qui est assez éloignée de la menstruation suivante. Je proposerais également, au lieu de faire une large incision soit de la membrane hymen, soit du diaphragme vaginal ou du col utérin oblitéré, qui a eu un funeste résultat dans quatre des observations que j'ai rapportées (4), une ponction avec un trocart d'un petit diamètre, comme celui à hydrocèle, de la munir d'une banderole pour éviter une déplétion trop rapide de la cavité utérine, un retrait brusque de cet organe qui pourrait déterminer par synergie la contraction des trompes, qu'on a surtout à redouter.”

The most noticeable improvement in the chapter on *genito-urinary fistula in the female* is the very full account of Simon's operation. But we must still insist upon it that Dr. Thomas fails to recognize a direct uretero-vaginal fistula as a lesion which has been considered by Simon, Duclout, and Deroubaix, and successful operations for which have been published.

No matter if Dr. Bozeman has recognized this as a result of the ordinary operation for vesico-vaginal fistula, or others have seen it as a complication of such fistula, the point is this, that uretero-vaginal fistula may exist as the primary and sole lesion.

Chapters twelfth and thirteenth, the one entitled *general considerations upon uterine pathology and treatment*, the other, *areolar hyperplasia of the uterus, the so-called chronic parenchymatous metritis*, will probably give rise to more controversy than all the rest of the book. In the first of these Dr. Thomas makes a bold—time will prove whether successful or not—effort to reconcile the conflicting theories of uterine pathology.

A part of the foundation for the views held by Dr. Thomas is the distinction which Virchow has made in his Cellular Pathology between *simple hypertrophy* and *numerical hypertrophy*, the latter being designated *hyperplasia*; and in a foot-note to each of the two chapters referred to he defines hypertrophy and hyperplasia, so that readers shall not fail of knowing at least what is meant by these terms. Accepting the words of another¹ we may say that this distinction seems very just at first sight, and it is theoretically; but practically it becomes a mere subtlety of language. In fact from all we know of the life of cells, whenever the protoplasm of one of these little bodies is increased to a certain amount, the cell divides. In favourable cases this division occurs abruptly under the observer's eye. In other words, simple hypertrophy or hypernutrition is only a transitory state which necessarily leads to hyperplasia, and, reciprocally, every hyperplasia presupposes a period of hypertrophy. Moreover, in examining an hypertrophied part, it is impossible to assert that

¹ Eugene Bechel.

there is simply an augmentation of volume of the cells, and not a multiplication. By most writers the two words are used as synonyms; and so too *hypergenesis*, introduced by Robin, has the same signification.

Dr. Thomas quotes with approval the following from "an accomplished writer" of New York: "The entity inflammation fallen from its high and palmy state is hanging by its eyelids as a pathogenic factor in most of the organs of the body, its last resting place seems to be the womb, and here it still has a good foothold. Why should uterine pathology alone be cumbered by an outworn theory?" Considering the fact that the three chapters immediately preceding the one in which this quotation occurs are devoted to three different varieties of inflammation, we apprehend that Dr. Thomas himself is not yet quite ready to dispense with the term.

We have no evidence that Dr. Thomas, or any other intelligent writer on diseases of women, looks upon inflammation as an entity. But inflammation as a condition marked by the four Celsian symptoms *calor, rubor, tumour, dolor*; inflammation as a diseased process,¹ a perversion of growth and nutrition, with hyperæmia and exudation; or as a morbid² process commencing with stasis resulting in exudation; or as a disturbance³ of nutrition which tends to reduce the cellular elements to the embryonic condition, which is generally accompanied by a fibrinous deposit in the inflamed parts, which may produce a peculiar liquid pus, and of which the lesions may be transitory, disappearing without leaving any trace, cause the destruction of an organ, or end in the formation of connective tissue—inflammationt hus defined must remain for a good while yet in all pathology, general or special, whether hanging by its eyelids or standing on its feet.

Dr. Thomas states that, as a very general rule, areolar hyperplasia of the uterus is a consequence of subinvolution. In a previous part of this chapter he remarks, in regard to those structural changes held by the late Sir James Simpson and others to occur in *involution*, the arrest of this involution being "characterized by a persistence of the muscular fibres characterizing pregnancy, in a state of fatty degeneration," "I search in vain the literature of the subject for a basis for these hypotheses." We doubt if the following lines from Chantreuil⁴ will suggest there may be a satisfactory answer. "After accouchement the tissue of the uterus undergoes important modifications. We are indebted in part for our precise knowledge of these transformations to the minute investigations of Koelliker and Heschl. According to the latter, the proper substance of the uterus undergoes a fatty degeneration so complete that there does not remain a single one of the fibres which composed this organ before parturition. This transformation commences from the fourth to the sixth day, and almost at the same time in all parts of the organ; a little later the change is further advanced in the internal than in the external layers. During the fourth week there generally will be observed in the body of the womb the rudiments of the new uterine tissue. The process is sometimes completed by the end of the second month."

Now acknowledging the correctness of these statements, and Dr. Thomas does, for he quotes Heschl on this very point, it does seem quite reasonable that when arrest of involution occurs there will be the evidences of this retrograde metamorphosis, and the condition of the uterus as Sir James and others describe it. Nor will the investigation of a single observer in a single case which Dr. Thomas quotes, be regarded as conclusive in establishing an opposite view.

¹ Druitt.² Rokitsansky.³ Heurtaux.⁴ Des Applications de l'Histologie à l'Obstetricque. Paris, 1872.

Among the causes of areolar hyperplasia are puerperal pelvic inflammation and endometritis—that is to say—inflammation this side and that, outside and inside of the womb, inflammation it may be of its serous investment, or of its mucous lining, but this disorder stops short of the uterine tissue proper—there is no extension from contiguity or from continuity—only areolar hyperplasia is the consequence. This seems, we do not say is—we have too much respect for Dr. Thomas's reading, large experience, and accuracy of reasoning, to venture that far—a weak point in his theory, and we acknowledge being almost as much puzzled over the matter as Pascal¹ in certain contradictions in regard to justice and truth. Nor are we in the least helped out of our trouble when we find the areolar hyperplasia is treated very much after the manner of a chronic inflammation.

The chapter in which *prolapsus uteri* is considered has been to a great extent re-written, bringing up the subject quite abreast with the most recent investigations in pathology and therapeutics. Nevertheless we mourn over such a sentence as this found on p. 333:—

“Thus it becomes not only more capacious, but heavier and more voluminous than normal, and even if its increase in volume and weight are consequences of uterine displacement, it drags upon the uterus and increases its tendency to descend.”

Under *flexions of the uterus* Dr. Thomas introduces to notice some very ingenious pessaries of his own device, and which have succeeded well in his hands.

Two of these are stem pessaries, and proper precautions are directed in their use. But really if a few more cases² of conception occur in patients wearing stem pessaries, we shall think these instruments the most innocent of appliances, and wonderfully useful for sterility.

We are glad to see in the chapter upon *inversion of the uterus* due prominence is given to Dr. J. P. White's method, and an illustration of his repositor presented.³

At the last meeting of the American Medical Association, Dr. Bontecou, of Troy, N. Y., reported a case of reduction of a uterus that had been inverted six months, this reduction accomplished without introducing the hand into the vagina; lithotomy forceps, the blades kept from injuring the uterus by rubber tubing, were first used to lessen the size of the uterus; a hard rubber speculum was then introduced, and through it *White's repositor*; in an hour and a half the fundus was restored even with the os, and then pressure with a metal ball soon completed the reduction. Dr. Bontecou's successful experiment, we believe, has added to our resources for restoring an inverted uterus.

The chapters on *pelvic cellulitis* and *pelvic peritonitis* show very few changes or additions, and those of a minor character. We wish that in the therapeu-

¹ “In the just and the unjust we find hardly anything which does not change its character in changing its climate. Three degrees of an elevation of the pole reverses the whole of jurisprudence. A meridian is decisive of truth, and a few years of possession. Fundamental laws change. Right has its epochs. A pleasant justice which a river or a mountain limits. Truth on this side the Pyrenees, error on the other.”

² In 1871 Olshausen published two, and recently Holst has published a third. *Gazette Obstetricale de Paris*, October 20th, 1874.

³ We have recently succeeded in reducing a uterine inversion of fourteen months and a half with Dr. White's repositor, having failed with a faithful trial of taxis.

tics of the latter affection Dr. Thomas had included conium, so extolled by Bernutz, and quinia, of which Dr. Barker¹ speaks so highly in the treatment of the puerperal variety of the affection. Our own assured conviction is that quinia ranks next in value to opium in the treatment of pelvic peritonitis, and that the best results are obtained by giving the two agents in combination.

The chapter on *pelvic abscess* is somewhat longer than in the previous edition, and in it the author answers the criticisms that have been made as to having a distinct chapter devoted to this affection, which in the vast majority of cases is simply the consequence of a pelvic cellulitis or peritonitis, or hæmatocele.

In the chapter on *uterine fibroids* due prominence is given to Hildebrandt's method, and while Dr. Thomas has not found such results as Hildebrandt obtained, he is prepared to endorse it as promising much good.

In the classification of *uterine polypi*, Dr. Thomas rejects the fibrinous which appeared in the third edition. It has seemed to us Dr. Thomas is too conservative in the treatment of *uterine polypi* when he counsels delaying all manipulation when practicable, until the tumour is expelled into the vagina, just as possibly his advice, on the other hand, in the treatment of hydatiform degeneration of the chorion may in some cases be too radical. We believe in the former the rule should be removal, when the polypus is discovered, not waiting for its expulsion into the vagina unless in exceptional cases, for the liability to frequently recurring hemorrhages is so great, and thence exhaustion and enfeeblement so decided, so inevitable, that a less risk is run in dilating the cervical canal sufficiently to remove the offending body.

And in regard to the other form of disease, is it not well to remember the teaching of Depaul,² that in some of these cases there may be hemorrhages and expulsion of the characteristic vesicles, thus permitting a positive diagnosis, and yet pregnancy be completed, and living children born: he also alludes to the fact that the famous Beclard was "the result of an hydatid pregnancy." Manifestly there was one case of this disease in which it is fortunate there was no dilatation of the cervix, no looped wire or scoop used, as Dr. Thomas advised.

Sarcoma of the uterus is a new, and though brief, a very valuable chapter. We believe there are earlier references to this disorder, though of course not bearing this name, than Dr. Thomas gives. In Sir Charles Mansfield Clarke's well-known work,³ he mentions a tumour which has been looked upon and treated as a polypus which ought to be distinguished from it on account of the prognostic to be given respecting its termination; he speaks of it as a tumour which is insensible, with an unequal and ragged surface, which comes down from the uterine cavity into the vagina, is without a narrow neck, etc.; he also mentions, quoting the description from him, that Herbiniaux had given an account of this disease.

The chapter upon *cancer of the uterus* shows not a few alterations, and some important additions.

Under the head of *pathology*, Dr. Thomas remarks, "with regard to the pathology of cancer the views of pathologists have, of late, undergone considerable modification. Formerly the prevailing opinion was that it was always the local manifestation of a general blood state. At present, opinion is divided; many still adhere to the old view, while others are yielding to the cogent reasoning of those who regard it as originally a local affection, one of the most striking

¹ The Puerperal Diseases, New York, 1874.

² Clinique Obstetricale. First fasciculus, pp. 265, 281, Paris, 1872.

³ Observations on those Diseases of Females which were attended by Discharges, 3d edition, London, 1831, vol. i. p. 261.

features of which is a tendency rapidly to intoxicate the system. In an exceedingly able and interesting discussion on this subject before the London Pathological Society, in March, 1874, the former of these views was maintained by Messrs. De Morgan, Hutchinson, Moxon, Arnott, and others; the latter by Sir James Paget, Sir W. Jenner, Dr. Greenhow, and others. So equally was the society divided in opinion that a commentator remarks that 'in point of numbers the constitutionalists almost equalled the localists.'

We confess that even in re-reading that most interesting discussion to which our author refers, we do not find the boundary lines of belief so distinctly drawn as he does. For example, Mr. De Morgan stated, "The view which I would maintain is that, though local in its origin, there is in some, possibly in all, even a predisposition to the disease which may possibly be distributed through the system, but much more probably has its seat in some among the tissues of the body." And Sir James Paget, fully endorsing this statement, further says, "I could agree with him entirely that we must hold both a local and a constitutional element as a necessary condition in every or nearly every case of cancer that comes under our observation." And even Mr. Hutchinson, who makes the most distinct avowal of *localism* for cancer, asserts, "No doubt it is, so far as it is constitutional, a disease of the solid tissues, and not of the blood." He very justly adds—and the remark is an important one—"I think the sooner we get rid of the expression 'blood disease,' and use the term 'constitutional, or disease of tissues,' the sooner we shall get to clear ideas on the subject."

Even Dr. Thomas himself, who seems, judging from the latter part of the third sentence which we have quoted from his work, to be a *localist*, a few sentences further on, has this observation, "Whatever be the peculiar state which gives rise to cancerous deposit, it is certain that any form of the affection may arise from one and the same disorder." Now what are meant by "state" and "disorder" if the one be not qualified by *constitutional*, and the other by the same or by *general*? While one may not be willing to go so far as Guéneau de Mussy when he asserts, "Il n'y a pas de maladies locales, il y a des maladies localisées," yet the general belief of the profession is that cancer is not purely of local origin, but that its various manifestations are dependent upon some unknown condition of the organism, in virtue of which this disease tends to appear and to reproduce itself, and which has been termed the *cancerous diathesis* (Heurtaux).

The chapter on *dysmenorrhœa* has added to it a section on *ovarian dysmenorrhœa*.

Dr. Thomas gives on p. 632 a representation of Dr. Byrne's galvano-caustic battery, and, as in the third edition, strongly advocates the use of a battery in amputations of the neck of the uterus and parts about the vulva, now adding, "The results of operation after electro-cautery are also much better than after the other methods, septic absorption, with its numerous consequences, and hemorrhage, both immediate and remote, being by it very perfectly prevented."

In his remarks upon ovarian physiology, Dr. Thomas, as in previous editions, states, p. 637, "The ovisac being thus emptied, a clot of blood soon forms within it, etc." Farre and Raciborski both teach that the effusion of blood into the ovisac takes place prior to its rupture, while Coste denies its general occurrence in these words. "Mais cet épanchement sanguin n'a pas lieu habituellement," etc.

Now we have met with that clot of blood so often in professional literature, that we really would be grateful if the physiologists would agree in sustaining or in rejecting its right to such honourable position.

But we really think Dr. Thomas most certainly mistaken, when on a subsequent page, under the heading of *ovarian apoplexy*—new edition, he asserts that this blood-clot, the common occurrence of which, as we have just seen, Coste denies, “upon subsequent alterations, constitutes the corpus luteum.” Certainly, without quoting authorities, the reading of Coste or Farre either, would not lead one to the full acceptance of this statement. And after examining the ovaries of sows and of ewes many times, studying as well as we could the modification of the Graafian vesicle and the formation of the *corpus luteum*, we never found the least evidence that a blood-clot had any part in the production of the latter.

Under *ovarian tumours* we find much that is new, new classifications and clearer, fuller details, while *vaginal ovariotomy* has added to the case of Dr. Thomas previously published, one by Dr. Gilmore, of Mobile, and one by Dr. Battey, of Georgia; all three of these being successful.

But we must bring this notice to a close, omitting though we do many points of great interest, and not noticing some of the numerous additions and changes.

The great success of this work is at once an evidence of its intrinsic worth, and of the interest which American physicians are taking in the study of diseases of women. That each, worth and interest, may “grow from more to more” is the earnest desire of the reviewer.

T. P.

ART. XXIV.—*The Building of a Brain*. By EDWARD H. CLARKE, M.D.
16mo. pp. 153. Boston: James R. Osgood & Co., 1874.

EVEN if our readers have wholly forgotten our notice of “Sex in Education,” they cannot fail to remember the sensation and controversy excited by the work itself. Not since the opening of the bag containing all the winds, by the sailors of Ulysses, has so great a tempest been unwittingly let loose. Never since Benjamin Allen applied to the landlady of his surgical friend Bob Sawyer, the appellation of “good woman,” has the attribution of womanhood to woman been so furiously resented. The thoughtful and temperate arguments and statements of the author have been met, by a certain class of people, with an exhibition of wrath and indignation which is of itself no mean evidence of the soundness and pertinency of his views. The great need of just such statements of physiological truth as Dr. Clarke has made, is convincingly demonstrated by the tone of some of his opponents. One of the saddest spectacles offered to the thoughtful observer by our American civilization, is that of women ashamed of their womanhood, and striving in every way to ignore and belittle the difference between man and woman. Wisely and truly does Dr. Clarke remind us, that “differentiation is nature’s method of ascent,” and that we should “cultivate the difference of the sexes, not try to hide or abolish it.” No true woman is she who contemns and deplors her organization. And no true man is he who would incite and assist her to thwart and pervert the purposes of her nature. The anger manifested by some of the “strong-minded” women and their weak-minded brethren, at Dr. Clarke’s utterances, is about as uncalled for as it would be if directed against a naturalist for the statement of specific differences in a natural family.

While the excitement caused by “Sex in Education” was still very lively, the executive committee of the National Educational Association invited its

author to address that body, upon the education of girls. Whether this implied approval of his views, or merely the recognition of an attractive sensation, we will not now speculate. An opportunity was afforded of personally presenting truths of supreme importance, before the very class of all others best able practically to apply them, and he deemed it a duty to improve it.

The present work is made up only in part of this address as prepared for delivery. The limited time allowed the speaker did not permit the recital of the entire lecture. In printing it he has not only given the address in full, but has added to it two other Parts bearing on female education.

The lecture is entitled, *Nature's Working Plans*. It has for its text or motto a sentence of Alexander Bain's, asserting the intimate alliance, not of nervous matter alone, but of the whole bodily system, with the mental functions. The significance of the subject treated is suggested by the somewhat startling reminder that this continent has witnessed the total extinction of at least two successive races of men, besides the one now so rapidly wasting and fading away with every setting sun. Whether our Anglo-Saxon civilization shall establish a more lasting empire, is the great question, to be answered by parents and teachers more than by any others.

It will be useless to cultivate and develop individuals, if the race be allowed to perish. Nor is it desirable to preserve the race at the sacrifice of individual perfection. The problem is, so to develop men and women as to insure that harmonious growth of physical, moral, and intellectual faculties, in which the perfection of each is an aid and support to the others, and not the index of their weakness. That the highest cerebral development induces sterility, is emphatically denied. Only a one-sided and improper culture tends to this result. True brain-building implies and insures a symmetrical growth of the entire organism. Healthful exercise of any one faculty tends to the improvement of all. It is only misdirected and excessive activity that gives temporary strength to one at the expense of others. The brain [meaning, in our author's sense, the whole cerebro-spinal system] is not merely the organ of thought, but presides as well over all action, conscious or unconscious, physical, mental, or moral. Brain-force it is, that enables men and women to bear the burdens and do the work of life, and to resist or overcome the attacks of disease.

No perfect brain exists in an imperfect body. Proper development and activity of all the other functions is essential to obtain that of the brain. Education is the bringing of all the powers of mind and body into perfect and harmonious working. All proper exercise of faculties contributes to the building of the brain. Disuse, and abuse, of organs and faculties, alike lessen the growth or impair the nutrition of some cerebral tract. The manifestations which we call mind, are just as dependent on brain-matter as is voluntary motion. Let the brain be rightly built up, by the proper exercise of all its parts, and its action will be normal throughout the whole range of its functions.

It is but too obvious that few of our schools, seminaries, and colleges fulfil the author's ideal of education. A narrow and superficial training of the intellect alone, takes the place of general culture and rounded development. Even this is conducted at the loss and expense of other portions of the brain, and thus liable to injure or imperil health of mind or body. So close is the reciprocity between cerebral and other bodily functions, that incomplete growth, or impaired nutrition of a portion of brain, caused by the inaction or the overaction of its connected organ, may in turn become productive of disease or deterioration in that organ.

The especial neglect of proper principles in our teaching of girls, so ably exhibited in Dr. Clarke's former work, is here again vigorously set forth.

The building of brain by its exercise in cerebration—which is its highest and noblest function, and the special exercise fitted for its best development—is here latest considered, because in the order of nature it follows the more general modes of activity. The ruinous consequences of stimulating cerebration in young brains have been but too often demonstrated by sad experience. The rapid growth of the body, the performance of the organic functions, and the spontaneous, incessant activity of the perceptive and other faculties, make demands upon the nervous system amply sufficient for its healthful exercise. Later, when growth is completed, when the cerebral regions governing the bodily functions are fully developed, comes the time when the special exercise of the brain in thinking is both safe and eminently useful. Not that intellectual activity should be wholly avoided in childhood and youth, but that it should occupy a subordinate place, and be allowed only with great caution.

As to the relation of sex to brain-building, our author believes the best results are obtained not by ignoring or belittling the distinction, but by fully appreciating and cultivating it. True education should make man more manly and woman more womanly. Only when our educational methods shall recognize the periodicity of her nature, can woman become healthfully and symmetrically developed.

Coming to practical details, Dr. Clarke views female education as made up of four divisions—physical, social, domestic, and technical; the latter only having to do with books. Now, if the time of study, in school and out, do not exceed five or six hours, he believes a monthly remission of the first two is a sufficient allowance for most girls. That is, omitting gymnastics, long walks, dancing, and excitements, domestic training and moderate study may continue. But exceptional cases often occur which require much more perfect rest. If, however, the schools require seven or nine hours of daily study, the remission should be extended to this branch also.

The stimulus of emulation, often useful for boys, is most frequently injurious if applied in like measure to girls. This forms, in practice, one grave objection to co-education.

We cannot refrain from quoting the following true and eloquent utterance: When the distinction of sex shall be fully realized, then, says our author, “we may hope, for both sexes, that identical will give place to appropriate education; that brains built out of the body and by the body, as well as out of books and by books, will crown and control every organ and function; that sex will be made subservient, not to passion, but to reason; and thus shall not only the grasp of our race be permanently assured upon this Western world, but the highest development of the individual, the noblest manhood and the loftiest womanhood be assured here likewise.” Amen to these words; and happy the man who shall further their fulfilment!

Dr. Clarke announces his belief that centuries of enlightened brain-building, aided by eradication of hereditary weakness through the survival of the fittest, may reasonably be expected to produce in the coming man and woman, brains whose power and quality is as much superior to ours as the microscope of to-day is to the rude lenses of the seventeenth century. Truly a startling idea; but, when we reflect, not so very absurd!

Part Second, entitled “An Error in Female-Building,” is made up of facts and testimonies confirming the author’s views of the incorrectness of prevailing methods of female education. To the question whether one sex more than another was injured in health by school discipline, the Massachusetts Board of Health received 160 answers, 115 being from physicians. That girls were more harmed, was asserted by 109. Only one reply said that boys were more harmed.

The other responses were variously limited and conditioned, importance being attached more to other morbid influences than to those connected with sex. A still larger proportion answered a question as to puberty increasing the tendency to illness, in the affirmative. Extracts, giving answers more in detail, are presented as significant samples of an immense amount of testimony.

A report of the Massachusetts Board of Labour is quoted, intimating that in "Sex in Education" the disease and suffering caused among female operatives, by the continuous character of their employments, is greatly understated. Striking cases are cited in confirmation of this position.

A most sad and touching history of the school career and premature death of a lovely and talented daughter, is given in a letter written to Dr. Clarke by her mother. Too late enlightened by "Sex in Education," the mother tells, in words whose very moderation adds pathos, the melancholy story of the sacrifice. Urged on by a worthy ambition, desirous to gratify her adoring parents, and to fulfil the proud anticipations of her teachers, this sweet girl was allowed to study far beyond her strength, and in complete disregard of the laws of her being. Sad it is to add that more than one physician failed to speak the word that should have saved her. Do we not all know that very many similar stories might be told, equally true and equally lamentable?

A lady of recognized eminence gives the results of observation and experience during her thirty years' teaching. She is convinced that girls cannot be safely subjected to the same stimulus that is useful and proper for boys, nor to the same continuousness of study as the latter.

D. H. Cochran, LL.D., of the Brooklyn Collegiate and Polytechnic Institute, writes to Dr. Clarke, supporting the views of "Sex in Education" most heartily. Much experience in State normal schools long ago compelled him to believe that the co-education of the two sexes cannot safely be continued beyond the age of puberty—and this not from any moral or social reasons, but upon purely physiological grounds.

Another distinguished teacher, Dr. Chas. E. West, bears the strongest testimony against the great danger of exciting, or countenancing, among female pupils, ambition to excel, or to attain rank or prizes.

Principal Stearns, of Exeter Female Academy, expresses substantial agreement with Dr. Clarke as to the necessity of separate training for girls, and as to lightening their tasks at certain periods.

Dr. Hammond, of New York, and Dr. Da Costa, of Philadelphia, express their concurrence with the author's opinions in theory and in experience. Drs. T. Addis Emmet and Fordyce Barker, of New York, and Lionel S. Beale, of London, give emphatic expression to their sense of the baneful results which flow from modern social and educational customs in regard to young girls.

In Part Third, called "A Glimpse at English Brain-building," we have a very brief but valuable sketch of the training of English girls of the middle and upper classes. Diet, at home and at school, is simpler, more nutritious, and more regularly and frequently taken. Girls are not allowed to hurry to school from a half-eaten or untasted breakfast. Meals are important events, not to be lightly treated or neglected. In two enormous day-schools visited in London and in Edinburgh, the girls were required to eat luncheon in the middle of the one session of four or five hours.

Out-door exercise is much more insisted on. Open fires are the rule at home, and rooms are not kept nearly so warm as with us. In a Scottish academy a recess of ten minutes occurs every hour, during which every window is thrown wide open. In this school the girls kept their hats on throughout

the session. Our severer and more uneven climate is against us in these matters.

Sleep is closely attended to. Girls of seventeen or eighteen are usually sent to bed at nine o'clock, in the boarding-schools. In many no books are allowed after eight. Pupils in day-schools are told to study no more than a certain very moderate time; and parents are requested to allow no home-study beyond the hours prescribed. The teachers, too, in arranging for home-study, consult and conform to the family habits and customs.

Tranquillity of life is enforced. Up to eighteen the girl sees almost nothing of society, even in her own home. She does not frequent public entertainments; and knows little and cares less what is going on in the outer world. Especially is she free, at school or home, from pernicious rivalry and competition. No public exhibitions or graduations are dreamed of. Her tasks are lighter than those of her brothers, and she never comes in competition with them.

Public opinion places a higher estimation upon sound, vigorous health, than with us. Sickness and pallor are not admired. Young men seek healthy wives—not interesting invalids.

What a contrast does this picture present to what we daily see around us. The hearty, simple-minded, ruddy English girl, fed and exercised with a care which *we*—shame to us!—give only to our fast horses, remaining a girl till nature has fully transformed her into a woman, and then blooming into a noble womanhood, with a capacity perfectly to discharge her duties in all relations. On the other hand, the thin and haggard, or pallid and puffy damsel, hard-studying, meal-neglecting, chocolate-eating, pickle-devouring, sleep-contemning, who despises walking exercise, who in cold weather spreads her skirts over the scorching blasts of the “register,” and who *will* go to her parties and balls even if obliged to plunge her feet in ice-water to arrest a vexatious function! Look at the girl and woman on the one side, and the factitious “young lady” on the other, and say which promises best to the land that breeds them!

B. L. R.

ART. XXV.—*Guy's Hospital Reports*. Edited by H. G. HOWSE, M.S. Third Series. Vol. XIX. 8vo. pp. xviii., 555. London: J. & A. Churchill, 1874.

THIS, which is the thirty-fourth successive volume issued by the staff of Guy's Hospital, contains twenty-four papers, the value of which we shall, as usual, endeavour to give our readers an opportunity of estimating by means of abstract and running commentary. Grouping together first those papers which are specially addressed to surgeons, we begin by inviting attention to Mr. J. COOPER FORSTER'S annual contribution of *Clinical Records*. The details of fifty-three cases are here given, fairly representing the ordinary run of practice in a large surgical hospital. During the past year Mr. Forster has employed *ether* as an anæsthetic in many of his cases, reserving chloroform for administration to patients at either extreme of life. His remarks upon the advantages and disadvantages of ether are generally judicious, though American surgeons will be surprised to hear that for its exhibition a “special apparatus” is required; we have seen too many patients etherized with a simple folded towel to have any confidence in special apparatus. Mr. Forster's concluding remarks indicate so well the real superiority of ether over chloroform as an anæsthetic, that we transcribe them to our pages.

"Upon the whole, if there is a little more expense, if there be a little more trouble or any other inconvenience, they are all as nothing compared with the sense of security which I have always felt when ether was being administered instead of chloroform. I should certainly at all times be induced to give it a preference. I do not mean to say that chloroform should never be exhibited, because I think, with scrupulous attention to the patient alone, on the part of the exhibitor—the entire exclusion of everything from his mind except the anæsthetic effects upon the patient, and if he totally disregards the steps of the operation, it may in the hands of a careful chloroformist be as safely administered as ether; still, it is scarcely possible to so entirely withdraw one's attention from the operation as not to run the slightest possible risk by the administration of an overdose of chloroform."

We next turn to a *Report on Operative Surgery*; by THOMAS BRYANT. This paper, which is very handsomely illustrated by means of eight lithographic plates, is intended to be the first of a series in which the author designs to quote from the records of the hospital some of the most interesting cases which have been under his care in its wards, and to append to each case or group of cases such clinical or pathological remarks as may suggest themselves. In the present article Mr. Bryant narrates eight cases of tumour connected with the bones of the face, and particularly with the upper and lower jaws. The clinical history of each case is first given, with an account of the operative treatment; then, in most instances, an elaborate report on the morbid anatomy and pathology of the growth removed, by Dr. Goodhart, the Surgical Registrar of the Hospital; and, finally, practical remarks, by Mr. Bryant, reviewing the case from both a clinical and a pathological stand-point. Six of the appended lithographic plates give pictures of the patients and of the naked-eye appearances of the removed tumours, while the remaining two exhibit the microscopic characters of the various morbid growths. The whole paper is one of much interest, and is, we think, such as is most appropriate in a volume of hospital reports. Mr. Bryant's plan of grouping together analogous cases and thoroughly discussing the various questions which they suggest is, we think, much more useful than that pursued by his colleague, Mr. Forster, whose wide range of subjects tends rather to distract than to command the reader's attention.

The next paper of surgical interest is *On Iritis*; by C. HIGGINS. If Mr. Bryant's contribution is appropriately, Mr. Higgins's is (in our judgment, at least) most inappropriately placed. As assistant ophthalmic surgeon to Guy's Hospital, Mr. Higgins has had, no doubt, ample opportunities of gaining practical experience, yet he fills his twenty pages with a systematic but purely didactic disquisition upon iritis, such as might be written by any well educated student who, though familiar with ophthalmic text-books, had yet never happened to see an inflamed iris. Very well as a lecture to his pupils, or as a chapter in his book, when he comes to write one, Mr. Higgins's paper is distinctively such as the readers of hospital reports do not want.

On Mechanical Appliances for the Treatment of Fractures of the Jaws is the title of a short article contributed by Mr. HENRY MOON, Assistant Dental Surgeon to Guy's Hospital. The author recommends the employment of interdental splints in the management of fractures of the lower jaw, and narrates two cases in which he obtained very satisfactory results by this mode of treatment. Mr. Moon's apparatus seems to be very ingenious, but, as a description of it could hardly be understood without the illustration which accompanies his pages, we must refer those of our readers who are interested in the subject to the original paper. The objection to this, as indeed to almost all the interdental splints which have been suggested, is, we think, that it is too complicated for general employment. The great desideratum in surgical apparatus

is simplicity, and hence we are more favourably impressed with the simple wire splint which Mr. Moon tells us was successfully employed by Mr. G. E. Hammond, during the Franco-German war and siege of Paris, than with Mr. Moon's own invention. After all, we must honestly confess that we are disposed to agree with the dictum which the author quotes, though only in condemnation, from Mr. Heath's well-known monograph: "That the majority of cases do well with merely the simple bandage not very tightly applied."

The aural surgery of the hospital is illustrated by a paper *On the Diagnosis of Diseases of the Ear*; by JAMES HINTON. Ear diseases are, according to Mr. Hinton, to be diagnosed by (1) a careful examination of the various parts of the affected organs, (2) an investigation into the functional state of the auditory nerve by the application of certain tests, and (3) an inquiry into the history and general condition of the patient. First in importance is ocular inspection, aided by the use of a simple round or oval speculum and a reflector, the latter being provided with a suitable lens if magnifying power is desired. For particular cases Dr. Blake's prism speculum, or a binocular instrument constructed as suggested by Dr. Eysell, may be employed, as may Dr. Blake's reflecting glasses for insertion into the tympanum in cases of perforation of the membrane. Siegle's pneumatic speculum is recommended as a valuable adjuvant in the diagnosis of adhesion or collapse of the membrana tympani. To ascertain the condition of the Eustachian tube and faucial mucous membrane, the rhinoscope may be employed, though Mr. Hinton's personal experience has not led him to value this instrument as much as is done by other writers; the perviousness of the Eustachian tube can only be ascertained by causing air to pass through it, and this may be attempted either by simple inflation of the ear, the mouth and nose being closed (Valsalva's method), by the use of Politzer's apparatus, or by the employment of the catheter. Whatever plan be adopted, the result can often be best appreciated by listening to the sound of the entering air by the aid of the otoscope. In using Politzer's method, Mr. Hinton advises that the bag should be applied to the nostril of the opposite side to that of the ear which it is intended to inflate, and that the meatus of the sound ear should be firmly closed so as to guard its membrana tympani from the effect of pressure. Vapour of chloroform may be used instead of air in cases in which inflation is difficult, and, if the tube cannot be opened by any of the means described, thin laminaria bougies may be resorted to, and may, if proper precautions are observed, be employed with perfect safety.

The most important tests for ascertaining the state of the auditory nerve are the voice, the watch, and the tuning fork. The notes of musical instruments are sometimes important aids, particularly in certain limited nerve affections. Dr. Lucae's "maximal phonometer," a short kind of speaking-trumpet, covered in at the end with a piece of elastic sheeting, the movements of which are exhibited on a dial, might be of value in testing the relative hearing power of different patients. The "double otoscope" and "interference otoscope," invented respectively by Politzer and Lucae, may also be of use in certain cases.

The third subject of inquiry, viz., as to the history and general condition of the patient, opens, as Mr. Hinton justly remarks, a very wide field for investigation. Certain maladies are known to be prolific causes of ear disease, particularly the various exanthemata, gout, phthisis, syphilis, and albuminuria. Beside these are to be considered the relation of aural affections to convulsive diseases, to diseases of the teeth, to irregularities of the cerebral circulation, to the effects of malarial poisoning, to exhaustion resulting from various depressing causes, such as overwork, parturition, or lactation, to the influences of climate or of hereditary predisposition, to the effects of various drugs, etc.

Mr. Hinton's paper, the merits of which can be but imperfectly appreciated from the brief abstract which we have given, forms a contribution of no little value to the not too well understood subject of aural diseases.

We next turn to an elaborate paper *On Erysipelas of the Kidney and Urinary Tract, with some Remarks on the Disease generally called Surgical Kidney*; by JAMES F. GOODHART, M.D. The cases which Dr. Goodhart (who is Surgical Registrar to Guy's Hospital) describes under the name of erysipelas of the kidney, are "selected instances of that disease which is more commonly known as surgical kidney or suppurative nephritis." The reasons which he gives for employing a new name for these cases are—1. That he believes some cases of suppurating kidney are actually of an erysipelatous origin; and 2. that he wishes to draw pointed attention to this fact. That erysipelas should affect the urinary tract, as well as the mucous lining of the air passages, is no doubt possible; but we must candidly say that we do not think Dr. Goodhart's cases have proved his position. Examples of urethral or genital fever, and of erysipelas, are both unfortunately not so uncommon in surgical wards that their coexistence can be considered necessarily to indicate any causal relation between them. Coincidence would sufficiently account for Dr. Goodhart's various series of cases, even if they could all be accepted in the sense in which he presents them; but when we find that, among his instances of contagious erysipelas, he includes cases of erythema, of simple phlegmonous inflammation, and of abscess, and that the various patients were treated in widely different parts of the hospital, the only connection between them being that they were attended by the same dresser, we surely must be allowed to profess incredulity as to the assumed fact of contagion. The fact that a patient suffering from urethral stricture dies by pyæmia, by no means makes it necessary to suppose that erysipelas has intervened; we think Dr. Dickinson has come nearer the truth in speaking of erysipelas as "an occasional complication," than Dr. Goodhart in regarding it as a frequent cause, of "surgical kidney."

In the latter part of his paper, Dr. Goodhart makes an ingenious suggestion of which we doubt not some ambitious operator will ere long avail himself; this is, that, as occlusion of one ureter is found to cause atrophy of the corresponding kidney, while the other kidney does an increased amount of work, *ligation of the ureter* should be practised as a remedy for renal calculus, in the hope that with the shrinking of the affected gland the symptoms of stone may gradually disappear.

On page 388 we find an incidental reference to a case of extroversion of the bladder, in a child fourteen months old, operated on by Mr. Durham with a fatal result. We regret that Mr. Durham has not thought proper to publish full details of this case; the statistics of the operation, as collected by the present writer in the number of this *Journal* for April, 1874, p. 422, appear to show that the results of treatment in these cases are very satisfactory, and that a fatal termination is quite exceptional; but it is obvious that if surgeons only make public their favourable results, and allow those which end unfortunately to be buried in oblivion, the real state of affairs may be very different.

The Value of Palpebral and Sub-conjunctival Ecchymosis, as a Symptom, Anatomically and Experimentally Studied, is the title of an interesting and valuable paper communicated by R. CLEMENT LUCAS, M.B., B.S. After considering the anatomical relations of the orbit and adjacent parts, Mr. Lucas refers to the view advanced by our fellow-countryman Dr. Hodges, of Boston, that the infiltration of blood gravitating from the forehead to the eyelids is invariably limited to the external or subcutaneous parts, being prevented by the palpebral ligament from penetrating inwards to the ocular conjunctiva, and

that hence the existence of traumatic sub-conjunctival ecchymosis necessarily proves either that the globe of the eye has received a direct contusion, or that an escape of blood has occurred within the orbital cavity.

"Were this the case," adds Mr. Lucas, "the diagnosis of injuries to the head would be greatly simplified . . . I think, however, that I shall be able to show that blood may, without much difficulty, find its way from the lids to the ocular conjunctiva at one particular point, and that, therefore, no very definite conclusions can be drawn from the apparent limiting action of the palpebral ligament."

Mr. Lucas's arguments are drawn from numerous clinical observations, and from ingenious experiments on the dead subject, made by injecting a mixture of ink and water into the eyelids, into the orbital cavity between the bone and periosteum, and through the periosteum into the orbital cellular tissue. His conclusions, which seem to us to be fully sustained by the facts on which he bases them, are as follows:—

"1. Blood may collect in the eyelids as the result of a superficial injury in the vicinity of the orbit, and after distending them may pass beneath the ocular conjunctiva, in which case it invariably spreads beneath that membrane in a direction from the outer canthus towards the cornea.

"2. Blood extravasated between the periosteum and roof of the orbit may find its way into the eyelids. It then appears first beneath the skin of the upper eyelid, and subsequently follows exactly the same course, and gives rise to precisely the same appearances, as blood which has collected in the lids from a superficial contusion.

"3. Hemorrhage into the cellular tissue of the orbit appears first, and in quantity, beneath the ocular conjunctiva, and subsequently spreads to the eyelids. The appearance thus presented, occurring after an injury to the head, is highly characteristic of a fracture of the base of the skull.

"4. Extravasation into the cellular tissue of the orbit is sometimes caused by crushing injuries of the abdomen and thorax. The blood is then seen beneath the conjunctiva and in the eyelids, presenting the same appearance as may result from fracture of the base of the skull."

The next paper to which we shall invite attention is contributed by Mr. H. G. HOWSE, M.S., and gives an account of *Two Cases of Intestinal Obstruction treated by Operation*. Mr. Howse's first case occurred in a man fifty-six years of age, who was admitted to Guy's Hospital, under the care of Dr. F. Taylor, and subsequently of Dr. Habershon, on the eighth day of his illness. On the next day a consultation was held to consider the propriety of operative interference, but, although a diagnosis of internal strangulation by a band or adhesions was made, the operation was (very unwisely, as the result of the case showed) considered inadvisable, and, the patient having been brought under the influence of chloroform, an attempt was made to relieve the obstruction by external manipulation. No advantage was gained by this procedure, and a week later (on the fifteenth day, therefore, of the disease), the abdomen was opened by an incision four inches long, and an inch and a half above and parallel to Ponpart's ligament. The peritoneum was found intensely inflamed, and, though the constricting band was readily discovered and divided, ulceration of the intestine with fecal extravasation had already occurred, and the patient died four hours after the operation.

Mr. Howse's second case, which appears to us to have been likewise one of internal strangulation by a band, though Mr. H. seems somewhat doubtful as to its pathology, occurred in a man thirty-three years of age, and the operation was performed on the third day of the disease. The constriction in this case was readily relieved by the finger and hernia knife, and the patient recovered without a single unfavourable symptom.

A third case is referred to, in which Mr. Davies-Colley undertook an exploratory operation in a case of internal obstruction, the patient dying shortly afterwards, and the autopsy revealing fecal extravasation from an ulceration of the bowel near the appendix vermiformis, apparently caused by the detention there of a biliary or intestinal concretion.

We must not omit to mention that Mr. Howse attributes the successful result in his second case, in a large degree to the fact that he operated with the precautions of what is known as the "antiseptic method."

The last of the surgical papers in the present volume of Reports is *On Extraction of Cataract*; by C. BADER. Mr. Bader's operation resembles in many respects that described by Mr. Liebreich, of St. Thomas's Hospital, the chief points of difference being that Mr. Bader makes his incision in a more central position, and that he effects the extrusion of the lens by digital manipulation only, without the aid of Daviel's spoon. It is but right to add that Mr. Bader asserts that before Mr. Liebreich published his account of his own mode of operating, he had had opportunities of becoming familiar with that practised at Guy's Hospital by Mr. Bader.

The *Statistical Analysis of the Patients treated in Guy's Hospital during the Year 1873*, by J. C. STEELE, M.D., is published in a much more abridged form than usual, and, though serving to show the amount of relief afforded by the hospital during the current year, contains but little of scientific interest or value.

J. A., JR.

We shall next invite attention to the medical papers in the volume, and first to an article *On the State of the Circulation in Acute Diseases*; by A. L. GALABIN, M.D. but we shall not attempt to analyze it, for to present anything like a satisfactory abstract would require more space than we have at our disposal. We recommend it to the notice of those who use the syphygmograph, and especially to those who employ it to aid them in the solution of any physiological problem relating to the vascular system.

We shall next invite attention to an article on *Progressive Locomotor Ataxy and other Progressive Paralyses*; by J. THOMPSON DICKSON, M.B. The case of locomotor ataxy which is reported in this paper, and upon which Dr. Dickson founds some remarks in reference to the relation which the various forms of progressive paralyses bear to one another, presented, in addition to many of the usual symptoms of the disease, some rare and extraordinary features. Among these were extreme emaciation, constant vomiting, mania, and epileptiform convulsions. The patient, a woman *æt.* 33, although married for 16 years, became pregnant for the first time about nine months after the appearance of the first symptom, and in due time was delivered of a living child. The vomiting, which was at first attributed to pregnancy, persisted after its completion, and resisted all efforts to control it. A temporary relief was afforded by passing the galvanic current along the spinal column and over the region of the stomach, but the sickness returned when this was given up in consequence of the skin becoming very sensitive. The case was seen by Drs. Lockhart Clarke and Hughlings Jackson, and M. Duchenne, all of whom agreed with Dr. Dickson as to its nature. Unfortunately no post-mortem examination was permitted, and we are therefore left in doubt as to the cause of the unusual symptoms. The author is inclined to ascribe the emaciation and sickness to some pathological state of the sympathetic, probably some change in the semilunar ganglia, an opinion which, he says, gains force when it is remembered that Dr. Clarke has found in some cases a great pigmentation of these ganglia.

The remainder of the paper is devoted to some remarks in regard to the symptoms of the various forms of progressive paralysis, together with a description of the lesions of the brain and spinal cord upon which these depend.

A Case of Diabetic Coma, treated with Partial Success by the Injection of a Saline Solution into the Blood; by C. HILTON FAGGE, M.D.

A Case of Diabetic Coma; by FREDERICK TAYLOR, M.D.

The patient, whose case is reported in the first of these communications, had not, up to the time of his coming under Dr. Fagge's care, been under regular medical treatment. When admitted into Guy's Hospital, he was in a comatose condition, the radial pulse being scarcely perceptible, and the body and limbs cold. Twenty-six ounces of a solution of sodium phosphate and sodium chloride (sp. gr. 1020, temperature 99°) were injected into his right cephalic vein, with the following results: In two hours the pulse was decidedly stronger, and the breathing less laboured. In five hours he sat up in bed and took his medicine, holding the glass in his own hand; was for the first time quite conscious, and answered questions somewhat readily. Sixteen hours and a half after the patient had recovered his consciousness, Dr. Fagge committed what he regards as a fatal mistake in directing for him a grain of codeia by the mouth, as very shortly after it was taken he became drowsy, and died suddenly in thirteen and a half hours.

The same treatment was adopted in the case reported by Dr. Taylor, but with much less striking results. For a short time the colour returned to the patient's lips and cheeks, the pulse beat with fair force, and the temperature in the axilla rose from 95.2° to 96.7°; but the improvement was only temporary, and she died two hours after the termination of the operation.

Dr. HILTON FAGGE contributes a series of *Cases Illustrating some Remote Effects of Spinal Deformities*. The frequency with which persons whose spines are deformed die at a comparatively early age with symptoms of dyspnoea, and even of dropsy, has probably escaped the notice of no physician of large clinical experience, and yet few authors have alluded to this. Unquestionably the great diminution in the capacity of the chest in cases of extreme spinal curvature, and also the impairment of the movements of the ribs, must sooner or later give rise to some serious results from interference with the respiratory function. Among these is hypertrophy of the right side of the heart, to which is added, in many instances, hypertrophy of the left side, greater power being necessary to drive the blood through the aorta, which is frequently very much displaced and drawn into the curve formed by the dorsal vertebrae. Six very unusual and interesting cases are reported, in all of which there existed dilatation and hypertrophy of the walls of the right cavities of the heart, and in several of them hypertrophy of those of the left, although it was never so marked in the latter as the former. In one case endocarditis was found. The paper is illustrated by a wood-cut, showing the deformity in one of the cases. In another, the dorsal and lumbar vertebrae were bent backwards, forming an acute angle. From the lower border of the third dorsal vertebra to the upper border of the third lumbar, there was a distance of only one and three-quarters of an inch.

Cases of Abscess within the Upper Part of the Abdomen; by C. HILTON FAGGE, M.D.

Case of Abscess between the Diaphragm and the Liver; by FREDERICK TAYLOR, M.D.

The class of cases reported in these two papers, although presenting features of great interest in regard both to their diagnosis and treatment, has, Dr. Fagge thinks, been somewhat neglected by writers. He divides them into two groups:

1. Those in which the abscess is situated in the right hypochondrium, lying between the liver and the diaphragm; and 2. Those in which the affected region is the left hypochondrium, the matter having formed in a cavity bounded by the spleen, the stomach, and the diaphragm. The first group, to which the case reported by Dr. Taylor belongs, contains seven cases; they presented many of the symptoms of hepatic abscess, for which some of them were mistaken. It is very important, however, to recognize them, since there is every reason to hope for a favourable result if the pus be evacuated by means of the aspirator shortly after its formation. The other group includes ten cases, in many of which there is history of direct violence to the part, as from a blow, kick, or fall; in others, the abscess appeared to arise by extension from some disease in one of the neighbouring organs. Thus we find in one case cancer of the stomach, in two others perforating ulcer of the same organ, set down as the cause; in other cases this cannot be discovered. In addition to the danger to life from the abscess itself, fatal pleurisy is not infrequently set up in consequence of perforation of the diaphragm—an accident which happened in seven of the cases reported in these papers. One patient recovered who presented the symptoms and signs of abscess in the left hypochondrium, after vomiting a large quantity of matter. Another recovered so far that she was able to return to her country, France, and has not since been heard of. All the others died. The papers are illustrated by several wood-cuts.

Action of the Poison of the Cobra di Capello or Naja Tripudians; by ALFRED S. TAYLOR, M.D., F.R.S.—The specimen of cobra poison, which Dr. Taylor used in his experiments, was in the dry state, and had been kept for twelve years, notwithstanding which it retained all its virulent properties. Two grains of the powder mixed with water were introduced beneath the skin of a rabbit, and produced death in three-quarters of an hour, the heart continuing to beat ten minutes after the cessation of the respiration. The same quantity injected into the stomach of a dog produced no symptoms of poisoning whatever. Dr. Fayer, however, in operating with the recent poison, has come to the conclusion that it may be absorbed through serous and mucous membranes. Thus he states that the cobra poison killed animals when introduced into the stomach, put into the eye, or applied to the peritoneum; and he relates that one of his assistants had a narrow escape, owing to a small portion of the poison falling on his conjunctiva during an experiment. It has, under these circumstances, an irritant action, producing, in the case just referred to, violent conjunctivitis. It had also a septic action if the bitten animal survived; the wound and parts about it are apt to slough. The poison operates, like other poisons, through the blood, and, although it acts quickly, in no case have its effects been so rapidly produced as to render it necessary to adopt any other theory of its action than that which depends on its absorption and its diffusion by the circulation. The poisoned blood operates primarily by annihilating nerve force in the brain and spinal marrow.

Dr. Fayer has shown that the blood of an animal killed by the poison is itself poisonous, and when injected into a healthy animal produces symptoms of poisoning. He states that he thus transmitted the poison through a series of three animals, with a fatal result in each case. The flesh of the animal may, however, be eaten with impunity, a fact ascribable either to the gastric mucous membrane not readily absorbing the poison, or to the small proportion of it diffused by the blood through the flesh. Dr. Fayer was unable to find any corpuscular change in the blood of the poisoned animals; it was, however, darkened, and in some instances its coagulating power was destroyed.

Analysis of the Cases of Rheumatism and other Diseases of the Joints, which have occurred in the Hospital during three Consecutive Years, with Remarks on the Pathological Alliances of Rheumatic Fever; by P. H. PYE-SMITH, M.D.—The diseases of the joints which, in addition to rheumatism, Dr. Pye-Smith discusses in the paper are gout, gonorrhœal rheumatism, osteoarthritis (rheumatoid arthritis), and pyæmia. He also avails himself of Mr. Manser's tables of 128 cases of chorea, in the hope that they may aid him in elucidating the difficult but important problem of the connection between this disease and rheumatic fever. His deductions in regard to rheumatism are drawn from 400 cases, 300 of which were treated in the wards of Guy's Hospital. Of the 400 cases 223 occurred in men and 177 in women. By far the greatest number of first attacks (319) were observed in individuals under thirty years of age; and moreover the liability to second attacks is found to diminish with advancing years. Thus, after a man has reached his forty-first year without suffering from rheumatic fever, its occurrence becomes very unlikely. After the age of forty-eight there are only four cases of a first attack, and two of these are rather doubtful. Not only is the disease less frequent after than before the age of thirty, but the attacks which occur in later life are less severe, and are seldom accompanied by cardiac inflammation. There are, however, exceptions to this rule, as is shown by a case in which a patient who had suffered repeatedly from rheumatism as a young man, was again attacked at seventy-three, and carried off by acute pericarditis. In 68 cases the patient asserted that one or more of his blood relations had suffered from rheumatism. In the 400 cases relapses occurred fifteen times. Cardiac complications are recorded in 227 of the cases, there being the physical signs of pericarditis in 96 of these, and of endocarditis in 131. A systolic murmur, audible at the base, was heard twenty times, and was probably dependent upon anæmia, although Dr. Pye-Smith is disposed to think not. A bruit of soft quality is not infrequently heard in this position during convalescence, especially when the patient is lying down, and will generally be found to disappear as the patient recovers his strength. Murmurs occurring at the aortic valves were only noted sixteen times, a number which we agree with the author in thinking accidentally small. Compared with pericarditis and valvular disease all other complications of rheumatism are unimportant. Among these pleurisy, pneumonia, and certain skin-diseases are mentioned. All the cases but eighteen recovered, excluding three cases in which the fatal result may fairly be attributed to accidental causes. This would make the percentage less than 4 per cent. In three cases death was due to hyperpyrexia.

Among the 400 patients only 7 stated that they had previously suffered from chorea, while in 150 cases of chorea there was a history of rheumatism in 42, and in 3 cases rheumatic fever appeared while they were under treatment. M. Sée found a history of rheumatism in 61 out of 128 cases of chorea, and the former disease had preceded the latter "in the immense majority of cases." The author gives an account of the post-mortem appearances in 11 fatal cases, in every one of which there was evidence of endocarditis.

In 61 cases of gout, of which the author has notes, the disease occurred in men fifty-four times, and in women seven times. The patients, as we should, of course, expect they would be, were older than those suffering from the disease just considered. The age of the youngest of them was twenty years. In a third of their number there was more or less satisfactory evidence of gout in a near blood relation. In regard to the influence of plumbism the author says he has never met with gout from this cause without hereditary predisposition or intemperance. He is also disposed to deny that plumbers or other workers in lead drink

more freely than other men. There is no evidence, he thinks, of sufficient weight to show that persons who have suffered from rheumatic fever are more likely to be attacked with gout, or that rheumatism and gout "run in families." There is nothing, however, in rheumatism to prevent a man from having gout, and the two diseases cannot in any degree be considered antagonistic. This is very much the opinion which he holds in reference to the relation which rheumatism bears to the other diseases of the joints discussed in this paper, patients with gonorrhœa not being more likely to have synovitis because they have had previous attacks of rheumatism, or because they are hereditarily predisposed to rheumatism. In thirteen cases of gout the patients supposed they had had rheumatism at some previous time, but in none of these had it left any trace upon the heart. There is also, in his opinion, no antagonism between phthisis and gout.

In the twenty-nine cases of gonorrhœal rheumatism observed, the patients were all men. This rarity in women is ascribed to the fact that the mucous membrane of the female urethra is not so richly supplied with nerves as in the male. The only secondary lesion he has seen which appeared to be more than accidentally connected with gonorrhœal synovitis is inflammation of the eye. Of course gonorrhœal ophthalmia produced by contagion is not here referred to, but a general inflammation which usually begins by slight pain and watering of the conjunctiva, then affects the sclerotic, and not unfrequently the iris also. The most characteristic appearance, he says, is the injection of the fine radiating vessels of the sclerotic which form a ring around the cornea.

The remarks which follow, in regard to osteo-arthritis and pyæmia, are interesting. The author says of the latter, it resembles rheumatism in producing multiple synovitis, in the attendant pyrexia, and in the frequent pericarditis and pleurisy, and occasionally endocarditis which accompany it.

Appended to the paper is a tabular statement of some of the chief points in the natural history of rheumatism and the other diseases under discussion.

A Case of Excretion of Urea by the Skin is related by FREDERICK TAYLOR, M.D. The patient died of granular degeneration of the kidneys, after having exhibited well-marked evidences of uræmic intoxication. Two days before death a peculiar appearance was presented by the face and hands. On these were numerous white masses thickly studded in groups, which appeared to contain some calcareous matter. The patient's face looked as though flour had been sprinkled over it. The deposit was moderately adherent to the skin, so that specimens for microscopical and chemical examination could be removed only by scraping with some force. Under the microscope it was seen to consist of small, white irregularly shaped masses, with crystalline prisms and spicula projecting from them. On adding nitric acid to a solution of the deposit in water and rectified spirit, flat hexagonal crystals resembling those of nitrate of urea were obtained. Crystals of oxalate of urea were formed upon the addition of oxalic acid to the solution.

The occurrence of cases similar to the above is not very common. A few are recorded by Leube, Deininger, and Kaup and Jürgensen, and its occasional appearance on the skin of patients suffering from cholera has been described by Schottln and Drasche. It has almost always been preceded or accompanied by a suppression, partial or entire, of the functions of the kidneys. The case reported by Dr. Taylor, moreover, agrees with those on record in the marked absence of even moderate dropsy, and in the fact that the sweating took place spontaneously during a state of collapse. In every case but one the sweating was followed by death. No examination of the blood was made, but, as Dr. Taylor says, the presence of an excess of urea in the blood would

not alone account for its secretion by the skin, for the pathological changes and clinical conditions were not different from what has been before noticed in cases of renal disease, in which this accident has not occurred. In the absence of an analysis of the blood, the author continues, there is nothing to oppose the conclusion expressed by Kaup and Jürgensen that the phenomenon must be referred to the "long duration of the death struggle," "to long agony and profuse sweating." With regard to the bearing of this case on therapeutics, Dr. Taylor says, "the richness of the perspiration in urea at first suggests the more frequent use of diaphoresis as a method of treatment, not only for the removal of fluid in anasarca, but also to get rid of excrementitious material in chronic Bright's disease without dropsy. But a consideration of the circumstances already pointed out, under which the secretion has been observed, will at once show that they are very different from those accompanying the use of the hot water and Turkish baths, our most efficient diaphoretics; for in these, as the temperature is raised, the vessels dilate and the whole surface becomes hyperæmic."

Four Cases of Poisoning are reported by THOMAS STEVENSON, M.D. 1. By white precipitate. 2. By binocalate of potash. 3. By mushrooms. 4. By mussels. The patient in the first case died in about a week after taking the poison in unknown but considerable quantity in mistake for magnesia. The symptoms were profuse salivation, fætor, sloughing of the gums, and death from exhaustion. Symptoms of intestinal irritation such as would be produced by corrosive sublimate were absent. After death there was found an hour-glass contraction of the stomach with discolouration of the small and large intestines. Dr. Stevenson says that notwithstanding its insolubility white precipitate is a poison even when entirely free from corrosive sublimate.

In the second case the symptoms were insensibility coming on within two or three minutes of the ingestion of the poison, injection of the mucous membrane of the mouth and pharynx, and enlargement of the tonsils without loss of membrane. Recovery resulted from the prompt administration of an emetic, followed by chalk mixture and the use of the stomach pump.

Mushrooms produce, Dr. Stevenson says, two classes of symptoms—gastro-intestinal, referable to irritation, and narcotic symptoms. Either class may predominate over the other, the two being associated together, or, as in the case he reports, narcosis is alone observed. The patient was a man aged 39 years, who ate for his supper about a pint of the *Agaricus stercorarius*. When first seen by Mr. Hicks he was in a state of semi-stupor, with pupils dilated and inactive, and the pulse slow and feeble, from 55 to 60. Emetics were given, and afterwards free vomiting took place, much dark coloured fluid with portions of the fungi being thrown up. The stomach was then thoroughly washed out by means of the stomach-pump. While the patient was still under the influence of the poison, and while Mr. Hicks was temporarily absent, he rushed wildly out of the house into the street, and was found in a neighbour's house very much exhausted by the exertion. Notwithstanding this there was at no time loss of consciousness. The patient made a good recovery.

The case of poisoning by mussels exhibits the usual symptoms which follow the ingestion of poisonous shell-fish.

Medico-Legal Observations on Tattoo-Marks as Evidence of Personal Identity, with Remarks on the Tichborne Case; by ALFRED S. TAYLOR, M.D., F.R.S.—The results of Dr. Taylor's investigations have led him to the general conclusion that tattoo-marks once properly made are practically indelible, but that, when the operation has been carelessly performed with weak colouring matter, deposited only in the superficial layers of the cutis, the marks may, in

the course of years, become lighter and disappear. Black pigment, such as China ink, or carbon, is much more likely to cause a permanent discolouration than vermilion. He does not believe that insoluble substances, such as those just alluded to, are absorbed, and, moreover, shows they cannot be removed, when the tattooing is well done, by any means except those which destroy the skin. Even when strong acids or the actual cautery have been used to destroy them, the marks may still be recognized with a lens, especially after the part has been well rubbed. These facts have a medico-legal bearing, as the presence or absence of tattoo-marks may become the strongest possible evidence of the identity or non-identity of an individual with a person known to be guilty of crime. Several very interesting cases in illustration of this are given, including the Tichborne case, which is well known in consequence of its having occupied public attention for so long a time.

Death from Disease or Poison; by ALFRED S. TAYLOR, M.D., F.R.S.—The case which forms the nucleus of this communication has excited much interest in England, and has been made the subject of a good deal of discussion in the English medical journals. The facts, briefly stated, are these: An old lady, who was known to be suffering from cardiac disease, died suddenly and unexpectedly after a short illness. She had been attended during the two last days of her life by her niece, who, it was admitted, had a pecuniary interest in her death, and who alone was with her when she died. No suspicion of foul play appears to have been entertained until some time afterwards, and then it seems to have rested upon no better foundation than that the medical attendants thought that the body retained its heat for an unusually long time, the temperature being estimated not by a thermometer, but by the hand. The medical expert who made a chemical examination of the viscera, although he failed to detect it, gave it as his opinion "that she died from some *volatile noxious substance* given to her *immediately prior* to death," basing this opinion upon the retention of heat by the body, which he asserted was not observed after death from syncope. Dr. Taylor shows that this statement is very incorrect by referring to some published observations¹ made by himself and Dr. Wilks, in which several cases of death from failure of the heart's action are reported. In many of these the body was found to be warm several hours after the extinction of life, and among them are cases in which hemorrhage had occurred. Dr. Taylor calls attention to the fact that nothing is said concerning the amount of clothing on the body or the temperature of the air, circumstances not without influence in controlling the loss of heat. It is also not stated how long a time elapsed after death before the observation in regard to the temperature was made. He therefore concluded that the retention of heat by the body does not render it impossible that death was due to syncope. He also shows that it is no reason for assuming that death was caused by a volatile poison such as prussic acid. He has never noticed an unusual retention of heat after poisoning with this substance, nor is any such case recorded in the works of the ablest writers on toxicology. "In cases of sudden death," he says, "from whatever cause, assuming the heat to be normal and the circulation in full vigour at the time of death, the body is usually more slow in losing its temperature; but this observation applies equally to death from syncope from disease of the heart, as to death from prussic acid." Dr. Taylor further demonstrates that there is nothing inconsistent, in the history of this case, with death from fatty degeneration of the heart, which was found at the post-mortem examination.

¹ 1 Guy's Hospital Reports, 1853.

In consequence of the testimony of the medical expert, the verdict rendered at the coroner's inquest was, "*That the deceased did not die a natural death—that her death was caused by poison, but by whom administered there was not sufficient evidence to determine.*" This verdict reflected upon the niece of the deceased, and an order for her arrest was immediately issued by the local magistrate, but before it could be put in force, overcome by the shock of the accusation, she had destroyed herself by strychnia. Dr. Taylor well says, that, if a charge of murder can rest upon testimony as baseless as that upon which this unfortunate woman was suspected, it will be a dangerous duty to watch by the bed of the dying, and perilous to be the sole witness of a sudden death. He closes his paper with some remarks in reference to the necessity of medical witnesses basing their opinions solely upon those facts which are of a medical nature, leaving it for the coroner or judge to receive or reject as evidence facts which are non-medical.

In an appendix to the paper, Dr. Taylor disproves the theory that morphia was administered to the deceased in such quantities as to cause death, there being nothing in the symptoms of the case or in the results of the autopsy to justify this suspicion. He also says that a single grain of the salts of morphia will, under certain circumstances, produce death—a fact which we commend to the notice of some of our surgical confrères who we happen to know use large doses of this powerful drug.

On the Detection of Blood by Guaiacum; by ALFRED S. TAYLOR, M.D., F.R.S.—The proper method of applying this test having already been described in the numbers of this *Journal* for October 1868 and July 1870, we will call attention only to what is new in this communication. Dr. Day has found, that, when tincture of guaiacum is exposed to light or air, it is liable to produce or take antozone from the air. When such a tincture is added to a solution of blood, a blueing of the resin takes place at once. The addition of the peroxide of hydrogen is not required, as this already exists in sufficient quantity in the tincture. It is, therefore, advisable, in all medico-legal cases, to make a fresh solution of the resin in alcohol, selecting the inner or unoxidized portions of the resin for this purpose. Dr. Taylor further says that a great number of liquids have the property of absorbing from the air or producing antozone or peroxide of hydrogen. Thus it has been found in alcoholic solutions of essential oils, in eau de Cologne, in numerous hydrocarbons, such as kerosene, benzole, and other similar products, in oils which absorb oxygen from the air, and in different kinds of fats after exposure to the air.

This volume is conspicuous by the absence of contributions from Dr. Samuel Wilks and Dr. S. O. Habershon, gentlemen whose papers add much to the value of this series. Their place has, however, been supplied by younger men who have contributed articles possessing at least average interest and value.

J. H. H.

ART. XXVI.—*Saint Thomas's Hospital Reports*. New Series. Edited by Dr. BRISTOWE, Dr. STONE, and Mr. CROFT. Vol. IV. 8vo. pp. xiv., 353. London: J. & A. Churchill, 1873.

IN accordance with our custom, we proceed to notice separately the papers in this volume, first calling attention to those having especial interest for the physician as distinguished from the surgeon. While these are not devoid of

importance, they will not, we think, be found of equal value to the majority of those contained in former volumes.

Dr. THOMAS B. PEACOCK, in his *Report on Cases of Fever treated in the Hospital between the spring of 1862 and the end of 1872*, gives the results of the analysis of 30 cases of typhus and 65 cases of typhoid fever which have been under his care during this time. In addition to these, he has treated 28 cases of febricula or slight fever. When making this statement, he takes occasion to signify his disapproval of the term "simple continued fever," which, although sanctioned by the Royal College of Physicians, is, he thinks, likely to mislead, by conveying the impression that there is a form of fever distinct from typhus and from typhoid, characterized by the absence of purely local lesions. The paper contains much that students of the statistics of the continued fevers will find both interesting and valuable; but inasmuch as Dr. Peacock's experience has led him to conclusions not very different from those generally accepted, we shall not notice it at length. In regard to a somewhat mooted point, the occurrence of a true relapse in typhoid fever, he entertains no doubt, two cases being mentioned in which there was not only a return of fever, but a reappearance of the spots on the skin.

Dr. JOHN HARLEY reports the results of some observations *On the Action of Fool's Parsley (Æthusa cynapium)*, made with the juice of the entire plant; with tinctures prepared from both ripe and green fruit; with a fluid extract, prepared with the view of separating any cynapine or other active principle that may have been left in the plant after the expression of the juice, and with the oleo-resin. Eighteen observations were made in all, eight of which were with the juice, which was given in doses varying from ninety minims to three fluidounces, without producing any other obvious effect than a slight contraction of the pupils, and even of this Dr. Harley does not appear to have been quite sure. The individuals experimented upon all showed the usual susceptibility to the action of conium, belladonna, and hyoseyamus. The other preparations were also given in correspondingly large doses—two fluidounces of the tincture, two drachms of the fluid extract, and ten grains of the oleo-resin—and in no case was any gastric irritation or any other effect, immediate or subsequent, observed. He has further found that the plant does not contain conia, as has been asserted by Walz and others. He therefore concludes that it is without poisonous properties, and the result of his experiment likewise shows that no therapeutical influence can be attributed to it.

He subjects to a critical examination sixteen cases of reputed poisoning by this plant, in which thirty-eight persons were involved, ten of whom died, and very clearly demonstrates that there is no evidence of poisoning by æthusa cynapium in any one of them. In a few instances the effects of disease were wrongly attributed to poisoning, and in others in which the symptoms were undoubtedly due to the ingestion of a vegetable poison, there is good reason to believe that this was aconite. This paper, although not quite of the character we look for in a volume of hospital reports, is a valuable one, because, as it seems to us, it definitely settles the question in the negative as to the possession of poisonous or therapeutic properties by the plant known as fool's parsley.

Dr. W. M. ORD, in some *Notes on Cases of Nervous Disorder*, calls attention to a condition which, while it has not escaped the observation of many physicians, has, we believe, not been fully described. This is the liability to slips of the tongue, which exists whenever there is an abnormal condition of the tongue, lips, or other parts concerned in articulation. Thus he has observed that such a thing as a sore or tender tongue, or a sharp tooth constantly fretting the tongue, or a sore cheek, lip, or gum, or a swollen throat, or a choked nose—

all interference, in fact, with the ordinary course of "guiding sensation"—will tend to produce slips of the tongue. Such affections, he continues, mislead the tongue, throwing the automatic apparatus out of gear, and they distract the central organ, which is suddenly called upon to give attention to matters ordinarily left to work themselves. He gives an amusing account of a slip he himself made, which we shall transcribe in his own words:—

"During one week of last winter I found myself constantly creating a laugh at lecture by floundering in my speech. At last, curiously enough, while talking of the functions of the tongue, and speaking of the possibility of dazzling the sense of taste, I reached my acme in saying, 'After washing the month thoroughly with neat castor oil, you will be able to swallow the brandy without tasting it.' So outrageous a derangement led me to examine into the possible causes of the whole series of errors. Reviewing my condition, I found myself to be in good health, not weary, not, as far as I could find out, impaired in memory or capacity of thinking. There were none of the concomitant symptoms of aphasia. But there was catarrhal inflammation of the lips, tongue, and mouth, kept up by a bitter east wind then prevalent. I found that these conditions affected my speaking in several ways. . . . It was necessary to speak more slowly than usual, and far more than the usual attention was necessary to manage correct articulation."

Similar slips of the tongue not infrequently occur after great fatigue, during violent emotion, or in the condition known as "absence of mind," simply because in all these states the attention of the centre presiding over the faculty of speech has been slackened. Many amusing slips of the tongue have been made by actors, in whom the relation of obedience between the brain and the tongue is habitually drawn very close, causing a dependence of the latter upon the former, which makes its helplessness the greater when the guiding power is removed.

"The tongue," the author says, "in all these cases, is like a horse accustomed to be ridden with a tight rein. Such a horse begins to stumble or walks into a ditch when the rein is loosened for a moment, and his loss of free-will makes him more apt to stumble than a horse ridden commonly with a loose rein."

It is scarcely necessary to add that, in the cases above alluded to, there is no disease of the brain, and that therefore aphasia was not present. The paper contains also the report of two cases: 1st. *Case of Sciatica, with reflex relaxation of gluteal and femoral muscles, without paræsthesia*; 2d. *Case of long standing Trigeminal Neuralgia, relaxation (?) of certain muscles supplied by third and seventh nerves on same side.*

Mr. W. S. GREENFIELD, the Medical Registrar of the Hospital, contributes a paper *On Insanity as a Sequel of Acute Disease and Hemorrhage*, a condition which seems to have supervened in an unusual number of instances in the hospital during the year preceding the date of publication of this volume. Under this heading he does not include those cases in which the mental derangement is nothing more than the delirium so common in all febrile diseases. In addition to these, cases are observed in which no definite relation of the onset of delirium to the occurrence and intensity of the fever apparently exists, or in which it is greatly in excess compared with other symptoms, or continues to arise in spite of their improvement. Insanity, under these circumstances, may commence during any part of the course of an acute febrile attack, at times appearing as the earliest symptom, at others at a later stage, and still more frequently at its termination or during convalescence. It occurs according to Christian¹ more frequently after the continued, malarial, and erup-

¹ Archives Générales de Médecine, 1873.

tive fevers, pneumonia, and articular rheumatism. than after other acute diseases. According to the same author, it makes its appearance under various forms. Thus in 114 cases tabulated by him, hallucinations were noted 15 times; mania 34 times; melancholia 16 times; stupidity 27 times; dementia 10 times; and ambitious delusion 8 times; certain forms of insanity being more likely to manifest themselves after some diseases than after others. Thus malarial fever is generally followed by acute mania or by melancholia, while typhoid fever gives rise more frequently to dementia or to maniacal delirium. Insanity thus caused may last only a few hours, or it may continue for months. In some cases indeed it becomes chronic, and may even be incurable, although this appears to be of infrequent occurrence. Among the predisposing causes may be mentioned severity of the attack, bodily or mental overwork previous to it, anxiety, hemorrhage, hereditary predisposition, and certain remedies. Included in the last-named class are ergotine, quinia, and tincture of the chloride of iron. Anything which has a tendency to depress the vital powers, or to produce anæmia, especially of the brain, will render the patient liable to this form of insanity. In regard to the effect of long-continued high temperature, Mr. Greenfield says, that, while it cannot be denied that this may have something to do in the production of the symptoms in many cases, they are observed in others in which there has not been hyperpyrexia. In rheumatism, the occurrence of mental disorder may be explained by supposing that the cerebral meninges have become inflamed. In the cases, however, which have terminated fatally, no lesions of the brain or its coverings have been discovered.

The disease generally terminates in recovery, and its treatment consists in the administration of tonics and of nutritious food. In very few instances is it necessary to send patients to an asylum.

Dr. J. S. BRISTOWE furnishes a report of *Cases of Cystic Dilatation of Hepatic and Pancreatic Ducts from Stricture, and of Hydatid Cysts of Abdomen*. Included in the first group is a case in which the *post-mortem* examination revealed the existence of a tight stricture, not unlike a urethral stricture in the portion of the duct contained within the intestinal walls. In consequence of this there was general dilatation of the gall-ducts throughout the liver; their walls being also considerably thickened. A microscopical examination showed the presence throughout the liver of numerous small masses of nucleated or small-celled structure, closely resembling in appearance syphilitic growths of this organ. The patient had had constitutional syphilis. During life there had been jaundice, hæmaturia, and epistaxis.

In the second case, there was obstruction by inflammatory changes of the common hepatic and pancreatic ducts, with great dilatation of the ducts of both glands; jaundice. The chief pancreatic duct ran in a tortuous course the whole length of the gland, and was large enough to admit the little finger. A section of the gland displayed numerous cut orifices of ducts varying in diameter from one or two lines downwards. Although the motions were frequently examined, nothing was ever found in them indicative of pancreatic disease.

The third case is one of syphilitic laryngitis in which a cyst the size of a small orange was accidentally discovered at the *post-mortem* examination in the substance of the pancreas. Its connection with the ducts could not be made out, but it had probably sprung from one of the small branches. It was situated near the right extremity of the gland, and which it divided almost completely into two parts, being covered by its capsule.

The second group comprises three cases of hydatid cysts of the liver, and one in which the diagnosis was somewhat obscure; Dr. Bristowe's diagnosis

halting between an hydatid cyst of the spleen and a simple abdominal cyst. In the first three cases paracentesis was performed, and in all with very favourable results, although it was necessary in one case to repeat the operation twice and in another once. In the first case (the age of the patient is not given, but she is said to have been a married woman), suppuration of the sac had commenced before she came under observation. The other two patients were girls aged respectively 12 and 15 years. In the younger of these it was not necessary to repeat the operation; in the other it was twice done. Peritonitis followed the first tapping, and was excited, Dr. Bristowe thinks, by the escape of the hydatid fluid into the peritoneal cavity.¹

The nature of the fourth case must be held to be doubtful, since no trace of hydatid membranes or hooklets was found in the reddish-brown liquid discharged from the cyst. A second tapping was necessary, after which the patient rapidly convalesced. The histories of three additional cases of hydatids of the liver, in which tapping was performed, will be found in the medical report at the end of the volume.

Mr. WILLIAM H. STONE, the Lecturer on Physics, communicates a short article *On the Physical Basis of Auscultation*, the object of which is to suggest the examination of the thorax as a machine, to consider the sounds elicited from it simply as a resonant cavity, and if possible, to indicate the direction in which purely physical consideration would guide our examination, and suggest further means of exploration. These objects seem to have been carefully carried out in the paper, which, however, we can hardly condense in such a way as to give an intelligible abstract of it without occupying more space than we have at our command.

The *Report of the Obstetrical Department*, which is made by Dr. HENRY GERVIS, shows that during the year ending December 3, 1872, 920 cases were attended; of these, 10 resulted in twin-births, so that the total number of children born in the hospital was 930. Of this number 38, or 4.26 per cent., were stillborn; 5 per cent. being stated by statistical authorities as the usual proportion. Of the 892 children born alive, 464 were males and 428 females. Of the 38 children born dead, 24 were males and 14 females, or in the proportion of 170 to 100. In no year has the proportion been so low as 140 to 100, the proportion stated by Sir J. Simpson to be the usual one. Three maternal deaths occurred during the year, or .32 per cent. Of the 920 cases, 842 were natural, 49 were abnormal, 20 were complicated, and 9 were both abnormal and complicated. The Report is illustrated by tables which the student of obstetrics will find it to his advantage to consult.

The Medical Report is made by Dr. Frederick Pollard, and shows that 1584 cases were under treatment in the medical wards of the Hospital during 1872. Of this number 591, or 41.8 per cent., were cured; 437, or 30.9 per cent., were relieved; 144, or 10.2 per cent., were unrelieved; and 241, or 17 per cent., died; the average duration of treatment being 35.9 days. Almost every variety of disease will be found to be represented in the tables. We would especially call attention to the table showing the condition of the heart in 150 cases of acute and subacute rheumatism, and to that devoted to valvular diseases of the heart.

J. H. H.

The first paper of special interest to surgeons is *On Bloodless Operations*, and is contributed by Mr. WILLIAM MAC CORMAC. The first case in which Mr.

¹ Neither Dr. Hilton Fagge, Dr. Duffin, nor M. Jules Simon, thinks that peritonitis is likely to result from the escape of the pure hydatid fluid into the peritoneal cavity. See *Amer. Journ. of the Med. Sci.* for July 1872 and April 1874.

Mac Cormac employed what is now so widely known as "Esmarch's apparatus," and, apparently, the first case in which this apparatus was employed in England, was one of necrosis, in a child six years old, and the result of the experiment seems to have been in every way satisfactory. From a short historical sketch of the subject it appears that the elastic rope and bandage were actually used in cases of amputation by Silvestri, of Vicenza, in 1862, though to Esmarch undoubtedly belongs the credit of generalizing and popularizing the "bloodless method." Mr. Mac Cormac has not met with any of the evil results, such as paralysis, etc., which have been attributed to the use of the elastic rope by Langenbeck and other surgeons.

It is a somewhat curious and not very encouraging reflection that with the numerous ingenious and theoretically irreproachable devices recently suggested for mitigating the evils of surgery, the horrors of an operation remain much the same as of old; what with the "bloodless method," to insure against hemorrhage by the elastic rope and bandage; with "painless incisions," made by a revolving knife worked by machinery so rapidly that the patient cannot tell when he has been cut; with acupressure and torsion, to remove all obstacles to primary union; with the "antiseptic method," to prevent blood-poisoning, and the hyposulphites to cure it after it has occurred; and, in the way of dressings, with a perfect *embarrass de richesses* in such sovereign cure-alls as the warm-bath, clay, cotton, and carbolic acid; with all these, one might suppose that to have a limb amputated, or a joint excised, would be looked upon as an innocent luxury, if not a desirable privilege, rather than as an evil to be dreaded only less than death. Seriously speaking, what innovations in operative surgery, save the use of anæsthetics, have held, or are likely to hold their ground; and, with this exception, in what respect are our operations materially safer or less dreadful than those of our predecessors? The present writer has himself employed Esmarch's apparatus, and with much satisfaction; he believes it to be a valuable addition to the surgical *armamentarium*; but will it maintain in the future the position which its advocates have claimed for it? Time alone will show.

The next surgical paper is contributed by Mr. R. LIEBREICH, and is entitled *Ophthalmological Miscellanea*. It gives accounts of four cases, one of "Anophthalmus congenitus" observed in an otherwise well-developed child eight days old, one of "Microphthalmus congenitus," one of "Extremely thin zonular cataract," and one of "An unusual form of intra-ocular hemorrhage." In all cases of the form of zonular cataract here described, Mr. Liebreich has noticed the appearance of the teeth referred to by Mr. Hutchinson as a characteristic accompaniment of parenchymatous keratitis, but has not been able to satisfy himself in every instance of the existence of congenital syphilis.

We shall next invite attention to a paper *On Infecting Sores on the Lips and in other Anomalous Positions*; by FRANCIS MASON, F.R.C.S. In this paper Mr. Mason has collected thirty-three cases, seven of them having been under his own care, in which syphilis originated with chancres, occurring elsewhere than on the genital organs, and five cases in which the disease was communicated by *indirect* or *mediate*, or, as the author not very happily terms it, by *secondary* contagion. The term *secondary* is inappropriate, as being applicable to contagion from *direct* contact with *secondary lesions*, and therefore to many instances of chancre found on the genital organs, as well as to most of those met with in unusual situations. In eleven of Mr. Mason's cases the chancre occupied the lower and in six the upper lip; a proportion materially differing from that given by Prof. Sigmund, who believes that the upper lip is more commonly affected. Those of our readers who are interested in the subject of the cephalic chancre will find several new cases recorded by Dr. M. H. Henry, of

New York, in the number of the *American Journal of Syphilography and Dermatology* for October, 1874.

The next paper is *On Intestinal Obstructions; their Symptoms, Causes, and Treatment*; by W. W. WAGSTAFFE. In this paper, which is both interesting and valuable, Mr. Wagstaffe begins by adverting to Simon's method of exploring the rectum by the introduction of the whole hand, and narrates a case of intestinal obstruction in which this mode of investigation was advantageously employed, and in which enterotomy was ultimately successfully resorted to. Mr. Wagstaffe divides cases of intestinal obstruction into four classes, viz.: (1) those depending on the presence of a new growth, either external to, or involving the intestine; (2) cases of intussusception; (3) examples of strangulation by a band or diverticulum, of volvulus, and of internal hernia; and (4) cases of obstruction from congenital defect. The consideration of the last group of cases he postpones until a future occasion, but comments briefly upon each of the other three, and his remarks upon each are generally judicious and worthy of attention. In cases of new growth Mr. Wagstaffe recommends colotomy, or, if from the seat of the obstruction this be deemed unadvisable, enterotomy, by an incision made in the right groin. For cases of intussusception, inflation from below is recommended, and, if this fail, laparotomy (Mr. W. calls it gastrotomy), or, which the author seems to prefer, enterotomy. We must demur to the correctness of Mr. Wagstaffe's statement that, in cases of intussusception, under non-operative treatment, the "chances of recovery are not one per cent."—the fact being that, according to Leichtenstern's statistics, which embrace between five and six hundred cases, the proportion of recoveries is over twenty-seven per cent. With regard to the results of laparotomy, too, those of our readers who have done the present writer the honour of reading his paper on the subject, in the number of this *Journal* for July, 1874, will be surprised at Mr. Wagstaffe's statement that "only two cases of success are on record."

The operation is certainly not one to be hastily resorted to (particularly in cases of intussusception), but, as a matter of fact, five out of sixteen cases¹ have terminated successfully; and as no permanently successful case of *enterotomy* for intussusception has as yet, we believe, been reported, Mr. Wagstaffe's preference for this operation seems to us to lack justification.

In his third class of cases Mr. Wagstaffe recommends puncture, to relieve distension, and an early resort to laparotomy if the symptoms do not yield to medical treatment. We cannot better terminate our notice of Mr. Wagstaffe's interesting paper than by quoting the results of his investigations in his own language.

"In conclusion," he says, "I would submit the following propositions as the result of my own experience in the post-mortem room and at the bedside:—

"That the symptoms of obstruction, though sometimes obscure, can generally be determined in time for the adoption of curative measures.

"That the causes of obstruction can generally be determined by the history of present and past illnesses, and by thorough external and internal examination; and that manual exploration by the rectum is certainly the greatest advance in our means of diagnosis.

¹ In the number of this *Journal* above referred to (pp. 59, 285) the writer collected fourteen cases; a fifteenth has since been reported by Dr. Ancrum in the *Charleston Medical Journal* for October, 1874, and a sixteenth case (by Carrier) is quoted by Mr. Hutchinson in his paper read before the Royal Medico-Chirurgical Society, and published in the 57th volume of the *Transactions*, which has just been received.

"That the locality of the disease may, perhaps most generally, be discovered by the use of the same means of diagnosis, particular attention being paid to internal examination by the rectum; and that the locality is often to be found by careful examination externally, and by the localization of pain at the outset of the illness.

"That the early treatment of the disease will be the same whatever the cause—by opium and belladonna to allay pain and peristalsis, by external friction to attempt replacement, by rectal distension to open a way from below or to wash out obstructing masses.

"That, after failure of such simple means, operative measures should be adopted without delay, the activity and immediateness of the treatment varying with the intensity and rapidity of the symptoms, recognising that more patients have been lost through delay than are likely to be destroyed by too early an operation.

"That if the cause of obstruction be known, and within reach of the rectum, and not removable, colotomy should be performed as early as possible.

"That if the obstruction be beyond reach and unknown, then, if the distension by gas be great, tapping the intestine with a fine trochar is likely to be beneficial, at all events for a time; but that, otherwise, either gastrotony or enterotomy must be performed, and

"That gastrotony (by which I mean opening the peritoneal cavity by, at first, a limited incision, and exploring) is likely to be the most beneficial operation; but

"That, above all things, it is most necessary in these cases to avoid delay, for conditions of strangulation which were at first relievable by operation soon become unrelievable, and we must reproach ourselves with not doing all that could have been done if we allow mechanical obstruction to kill without attempting mechanical relief."

Mr. Wagstaffe's paper is terminated with a table, giving details of eighteen fatal cases of intestinal obstruction, excluding hernia, which occurred in St. Thomas's Hospital during the ten years ending Dec. 31st. 1872.

On certain Congenital Tumours of the Sacral and Perineal Regions, with account of an Enormous Perineal Tumour in a Child born alive, is the title of the next paper, which is also contributed by Mr. W. W. WAGSTAFFE. A long quotation is first given from Von Ammon's work on Congenital Surgical Affections, describing the various forms of solid tumours met with congenitally in the sacral and perineal regions, and the author then gives an account of the specimen observed by himself in a case which occurred in the practice of Mr. H. K. Hitchcock, of Lewisham. Contrary to what might be inferred from the title of the paper, the child, a female, was, from the unavoidable delay in delivery, "dead when fully born." Except for the perineal growth it appeared to be in all respects well developed and naturally formed.

"The tumour projected from the posterior part of the perinæum, as a large ovoid mass fully the size of two fists, the long axis being in the line of the body. Its dimensions when fresh were seven inches long, by four and a half wide, and four thick. It was irregularly nodulated on the surface, owing to the projection of numerous large and small cysts, and was covered with skin, which had been thinned out, until at the most dependent part it was a mere film. Ulceration had occurred at one spot, and here a fleshy mass protruded, about the size of a walnut, and of a deep red colour. The greater part of the surface was mottled, and of shades of colour due to the projection of semi-transparent cysts under the thinned skin."

Dissection showed the tumour to be an example of the ordinary spindle-celled sarcoma, containing numerous cysts lined with one or more layers of epithelium. Mr. Wagstaffe is disposed to think that the morbid growth originated in the coccygeal gland.

A table, taken from Braune, is appended, giving particulars of nine cases of

tumour known to have been connected with the spinal canal, seven of degeneration of the coccygeal gland, forty-six of coccygeal tumour proper, seventeen of sacral hygroma, six of lipoma, and five of tumours of various kinds met with in adults, and the congenital nature of which was not certain.

The *Surgical Report* for 1872, by C. E. SAUNDERS, M.D., Surgical Registrar, terminates the volume. It embraces the usual tables of diseases, injuries, etc., of operations, and of cases of erysipelas, pyæmia, and tetanus, with a summary containing remarks on specially interesting cases, and giving the most important details of *post-mortem* examinations. Among the operations we note three cases (all fatal) of gastrotomy—or, to use Sédillot's more accurate term, *gastrostomy*¹—for œsophageal stricture; two of these have been already referred to in these pages, in our notice of Mr. Mac Cormac's paper in the fifth volume of the Clinical Society's *Transactions* (see No. of this Journal for April, 1873, p. 487), and the third we presume to be the case reported by Mr. F. Mason; to the sixteen cases which we have heretofore enumerated (*loc. cit.*, p. 487, *foot note*), we are now able to add four others, recorded respectively by Vonthaden, Bryant, Vincent Jackson, and Jacobi, of New York. Of the whole twenty, not one has, we believe, terminated successfully; how many more fatal results, we may ask, will be required to convince the profession that the "happy dispatch" is not among the legitimate resources of surgery!

We note with interest a reference to three cases of extroversion of the bladder, two of which were "operated on with some degree of success, the ureters being diverted into the rectum." The third case was not submitted to operation, but terminated fatally from the supervention of bronchitis and œdema of the glottis.

If the present volume of Reports is of less interest than some of its predecessors, all short-comings must be forgotten in regret for the "serious illness of several members of the staff," which the editors allege as an excuse for the delay which has attended the appearance of the work. J. A., JR.

ART. XXVII.—*Transactions of the Medical Society of the County of Albany.*

From June 10, 1851, to June 14, 1870. 8vo. pp. 519. Albany, N. Y., 1872.

THIS volume, containing the notes of annual, semi-annual, monthly, and special meetings, lists of members, obituary notices of deceased members, and condensed sketches of papers and debates, possesses comparatively little interest for readers unconnected with the Albany faculty. Of course, however, it does contain cases, ideas, and suggestions of permanent value. Such volumes, placed in reference libraries, are often of great use to the student seeking to know all that has been said or seen as to some particular subject. Condensed as its contents already are, we cannot, even if it were desirable, examine them in detail.

We are sorry to notice in the archives of the Society, evidence that it received, without examination and without question, the pretensions of W. T. G. Morton, not only to the sole credit of ether-anæsthesia, but to having expended \$115,000 in the effort to introduce it.

¹ *Gastrotomy* (γαστήρ and τέμνω) is the simple operation of opening the stomach, as for the removal of a foreign body. *Gastrostomy* (γαστήρ and στρέμμα) is the operation for establishing a gastric mouth or artificial opening for the introduction of food.

In January, 1870, the Society took an honourable stand against quackish practices, by rebuking certain of its fellows for obtaining newspaper puffery for a medical college and its faculty.

The only papers presented which are here printed in full, are, we believe, the biographical notices. These are generally quite brief, one of the most extended and elaborate being that of the late Sylvester D. Willard, M.D., which, with a list of his works, fills eleven pages.

To a work of this sort, which no one reads through, but consults only as a book of reference, a good, full index is all-important. This, we regret to say, the present volume wholly lacks. What is called an index is, with slight exceptions, merely an alphabetical list of proper names, with reference under each to the pages on which the person appears in any manner. Thus, if the reader wish to find out what has been said and shown during this score of years concerning cancer or delirium tremens, he must look under every name, from Adams to Young. Such an index as we find here is good and convenient for certain purposes; but one strictly general should have been added to it.

The work of preparation for the press seems to have been skilfully done. The obituaries are in good taste. The print, paper, and proof-reading, all are good—forming, with the one exception just noted, a very creditable volume.

B. L. R.

ART. XXVIII.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Society of New Jersey.* 8vo. pp. 270. Newark, 1874.
2. *Transactions of the Medical Association of the State of Alabama.* 8vo. pp. 427. Montgomery, 1874.
3. *Transactions of the Medical and Chirurgical Faculty of Maryland.* 8vo. pp. 200. Baltimore, 1874.
4. *Transactions of the Medical Society of the State of West Virginia.* 8vo. pp. 130. Wheeling, 1874.
5. *Transactions of the Medical Society of the District of Columbia.* Oct. 1874. 8vo. pp. 24. Washington, 1874.
6. *Transactions of the New Hampshire Medical Society.* 8vo. pp. 129. Concord, 1874.
7. *Transactions of the Indiana State Medical Society,* 1874. 8vo. pp. 219. Indianapolis.

1. This handsomely printed volume of the *Transactions of the Medical Society of New Jersey* is illustrated with a well-engraved portrait of the late Richard M. Cooper, M.D., of Camden. Brief obituary notices of Dr. Cooper, and of several other members deceased, are given.

The presidential address, by Dr. T. J. THOMSON, is an earnest and dignified plea for "Medical Truthfulness." The strictest truth and integrity, with judicial fairness of mind, are insisted upon; and the practice of deceiving patients is most vigorously protested against.

In an essay upon *Obstetrical Forceps*, Dr. JOHN V. SCHENCK makes a bold and forcible argument in favour of a much freer use of this instrument than has been allowed by our older teachers. In view of the indubitable fact that forceps are used by our younger men with a frequency which would horrify their fathers, we believe it well that the reasons for this course should be plainly

stated. Men can then judge whether the new departure is or is not founded upon sound principles.

An account of the *affections of the eye from smallpox*, is contributed by Dr. CHARLES J. KIPP.

In a report of the Standing Committee upon the Medical History of the State, we find an epitome of the reports of the different district medical societies. It is a fact very creditable to the profession in New Jersey that only two counties failed to make a report.

The State Society having addressed to the local societies questions as to the virtues of chloral-hydrate, and of hypodermic medication, and as to the alleged agency of physicians' prescriptions in producing habits of intoxication, these are the subjects principally treated in the district reports.

The opinions as to chloral are amusingly diverse. Nevertheless, the evidence of its good effects are both strong and definite. Besides the testimony as to its more ordinary uses, we find that one physician finds it highly useful in the early stages of tedious labour. Three have succeeded in breaking up by its means the habitual use of opium as a stimulant. Another, makes the very vague and unsatisfactory statement that he has known "a fatal result" to ensue from "a small dose." Its combination with morphia is approved by many.

Hypodermic medication meets with very general favour—more, we believe, than it deserves. It is invaluable in certain classes of cases, especially where there is reason to fear that the stomach will not absorb the drug, or where the drug when taken into the stomach produces unpleasant effects, or where a more instantaneous impression is needed. In many cases, however, it is needlessly and wrongfully substituted for the ordinary mode of administration.

The answer to the vulgar charge of making drunkards by their prescriptions, is emphatic and nearly unanimous. Dr. J. L. BODINE, of Trenton, hits the nail hard and squarely on the head, when he says, "this charge is made for the most part by two classes of people—those most intemperate men who are seeking to make all men sober by legislative enactment, and those cowardly drunkards who, with the spirit of the first man, Adam, are seeking an excuse for their own weakness and crime."

One reporter adverts to the frequency with which even expensive country houses are rendered unhealthy by the sewer-gas passing freely up through the sinks and waste-pipes.

A case of hip-joint disease, in which an escape of matter took place into the bladder, is reported upon hearsay evidence.

A remarkable case of *metastatic abscesses*, following a bruise, in a child of nine years, is reported by Dr. E. W. BUCK. The patient lived three months, passed through pneumonia and peritonitis, and finally succumbed to gangrene of the lower extremity, supposed to be due to embolism of the femoral artery. It is said to have enjoyed perfect health prior to the fall which bruised him.

B. D. CARPENTER, M.D., communicates a very severe and interesting case of *tetanus*. The patient, a vigorous labourer, was treated with continuous applications of ice-bags to the spine, frequent and full doses of opiates, and chloral in increasing doses, up to one ounce per night in two doses. Enemata of turpentine and assafoetida, in milk or beef-tea, were also employed. Complete recovery resulted in about twelve days' treatment. In quite an able and elaborate little essay on this disease, Dr. Carpenter lays great stress on the supreme importance of keeping the patient and his room perfectly quiet, doing nothing to surprise him, and especially never doing anything to him without explaining the intention and obtaining his consent. Great care in this regard is necessary to avoid exciting fresh spasms. None but the most discreet and intelligent

nurses can be trusted to carry out treatment with the requisite gentleness and caution. The noise and excitements of a hospital ward are alone sufficient to defeat the best medication.

A case of *uterine hydatids*, developed and thrown off in the first three months of pregnancy, is reported by Dr. F. G. PAYNE.

A curious case of *aconite poisoning* is reported. For the relief of neuralgia of the head and face in a young lady, the drug was being used in full doses. In attempting to apply a few drops externally, about a drachm was spilled upon the scalp, and chanced to spread over an excoriated surface. Total insensibility occurred in half an hour, followed by abolition of vision and great difficulty of deglutition. The pupils, at first contracted, in an hour became enormously dilated, in which state they remained twelve hours. Urinary and lachrymal secretions continued free. Three hours after accident, respiration had sunk to ten per minute. Pulse slow, and at times almost imperceptible. "Before deglutition was completely impossible," a half-pint of strong coffee, with a half-ounce of whiskey, was administered. After this, for twelve hours, the same mixture was used as a lotion over abdomen. When again able to swallow, small doses of strychnia seemed to hasten recovery. As some compensation for the mental suffering caused him by the terrifying consequences of his own accidental application, the doctor has the gratification of believing that a radical cure has followed his undesignedly heroic treatment.

Ulcers of the tricuspid valves, and *rupture of the mitral*, were observed by Dr. C. W. LARSON, in a child of three years old. Death occurred instantaneously. The heart was enlarged, "full of blood on the arterial side," but "flaccid on the venous side." Very large cicatrices of old ulcerations were found in the ileum near the cæcum. The child had suffered from severe enteritis a year before.

For the city of Trenton, Dr. BODINE reports the epidemic prevalence of *whooping-cough*, *mumps*, *scarlet fever*, and *measles*. Pertussis prevailed mostly in the summer, mumps in the autumn, and measles in the winter. *Erysipelas* was somewhat common during the past winter and spring. In one case the disease occurred in a patient subject to trifacial neuralgia, and was limited to the regions affected by the latter malady.

The manufacture of pottery in the same city is observed to cause special forms of disease in the workmen. The inhalation of the dust of clay, plaster of Paris, quartz, etc., causes a train of symptoms known as "potters' asthma" and "potters' consumption." Bronchitis, emphysema, dilated bronchi, with consolidation and ultimate destruction of lung-tissue, are the results of the constant accumulation of irritant matter. Lead poisoning is not infrequent, from the substances used in glazing the ware. Very young children, here employed, are to be seen suffering the tortures of lead-colic.

Dr. Bodine attributes the very high rate of mortality—30 to 1000 living—principally to the total want of drainage of the naturally wet and clayey subsoil, and to the practice of filling in hollows with all manner of refuse.

Dr. TREGANOWAN describes a singular and fatal case of *hemorrhage* from the *carotid artery* resulting from extensive gangrenous disease following acute tonsillitis. The fatal bleeding, the only one mentioned, did not occur till two or three months after the acute inflammation. The autopsy revealed almost complete destruction of the parotid gland, gangrenous softening of the entire circumference of the external carotid, with rupture, and fistulous openings into the fauces.

The reporter for Monmouth County, Dr. S. H. HUNT, speaking of the epidemic prevalence and severity of *pertussis*, notices the number of adults affected,

many of whom had been through the disease in childhood also. Complications of bronchitis, bowel complaints, and convulsions, were frequent in young children, and caused many deaths. In the winter, *diphtheria* appeared with great severity. A tendency to non-diphtheritic sore throat, with prostration, was observed to be common at this time. Sequelæ, as paralysis, impaired vision, strabismus, etc., were frequent. Excessive hemorrhage from the diseased surfaces of the nares and fauces was in two cases arrested by the spray of Monsel's solution, one part to three of glycerine.

A case of *tetanus*, in which the patient suddenly sank away and died some days after all spasm and rigidity had ceased, is reported by Dr. T. J. THOMASON. The cause of death seems a mystery, as the patient said of himself that he "ate well," "had no spasms, and felt all right." The reporter would seem to blame the chloral treatment for this result, though he does not express himself quite clearly. The death was on the eleventh day of illness.

Dr. J. B. MATTISON narrates a case of exceptionally horrible and chronic neuralgia, which was relieved, and apparently cured, by hypodermic injection of twenty minims of chloroform. From that moment, opiates, which had been long used in enormous doses, were wholly suspended. Subcutaneous exhibition of strychnia and atropia, and the ingestion of quinia, iron, and arsenic, with chloral at night, enabled the six years' slave to morphia to dispense with it, and to improve in his general health. He has been for months completely exempt from the pains which had caused him fifteen years of torture.

Dr. P. A. HARRIS, being called to a case of compound comminuted fracture of the upper portion of femur, crushed by the falling of a rock of 300 pounds, excised the head, neck, and upper part of the shaft. No bad symptoms appeared; and five months afterwards the weight of the body can be thrown on the limb without pain; firm union with slight motion exists at the hip, and only three inches of shortening remains, though five inches of length was removed. A single sinus remains open, with slight discharge of healthy pus. No dead bone has ever been detected. Injections of tepid water slightly carbolized were used throughout the treatment of the wound.

One gentleman, believing that failures as well as successes should be recorded, gives his sad experience of two fatal cases of *placenta prævia* in one day. Several other cases resulted more favourably.

Dr. OAKLEY narrates an instructive history of several cases, three fatal, from typhoid fever, and disturbance of health in many persons, all occurring in a house whose sinks and closet pipes were finally discovered to deliver their contents not into the street sewer but just beneath the surface of the cellar floor.

An anomalous series of cases, extended from the first one by contagion, is reported by Dr. KINCH. The infection was variolous, but in two fatal cases apparently modified by a profound malarial saturation.

Judging from these local reports, whooping-cough, measles, and mumps seem to have been rather widely prevalent, and possibly scarlet fever a little more than usual. Diphtheria is but seldom mentioned, and cerebro-spinal meningitis still less often. Malarial diseases of course continue prominent. In general, however, it is believed that the health of the State has been unusually good.

We regret to find so handsome and valuable a volume considerably marred by typographical errors. Compared to many others, this volume is carefully revised; but we expect a higher standard in all things, from this venerable but spirited society.

2. The expressions of modest satisfaction with which the publishing committee of the *Transactions of the Medical Association of the State of Alabama*

present to their fellows this goodly volume are fully justified. So large is the number of excellent essays, and so limited is our space, that we are almost compelled to content ourselves with a few words of general and well-merited commendation. If, however, we attempt at all to enter into details, it must be with little hope of doing critical justice, but rather only to indicate the principal subjects treated, for the benefit of any reader who may be seeking the latest presentation or discussion of some particular topic.

The new Board of Censors make some recommendations for legislation by the General Assembly. One of these proposes to constitute the State and county medical societies, respectively, general and local boards of health. Another, aims at preventing unqualified persons from practising medicine.

The sanitary needs of the State, and the related duties of physicians, are treated intelligently, though a little diffusely, in the address of the President, Dr. KETCHUM. The spirit of the paper is excellent, and its recommendations are good.

Dr. R. F. MICHEL gives a description of the *epidemic of yellow fever* in 1873, as observed by him in Montgomery.

Prof. JEROME COCHRAN presents a somewhat extended history of the entire epidemic. In seven principal cities of the three States afflicted, there occurred 16,760 cases, with 3308 deaths. Suggestions as to treatment, disinfection, prevention, etc., and a meteorological table for the year, add to the value of the paper.

The peculiar affection known as the *dengue* is reported upon by Dr. WM. H. ANDERSON. Neither this writer nor the two just mentioned have any faith in the notion that this affection is a modified yellow fever, or in any way related to it.

Local epidemics of *cholera* are well described by Dr. M. H. JORDAN and Dr. J. J. DEMENT.

Prof. COCHRAN presents an elaborate paper upon the *white blood-corpuscle*. This body he regards as "the lineal descendant of the original undifferentiated segments of the ovum." The article embraces much curious knowledge and ingenious speculation. It deals more with the occult origin and early relations of the corpuscle, and with its analogues in other organisms, than with its character and functions as a completed element in the blood.

An able plea for State aid, to be given to hospitals, reformatories, and advanced schools, is made by Dr. BRYCE of the State Insane Hospital.

A paper on *hemorrhagic malarial fever*, by Dr. M'Daniel, we need not notice here, as it is elsewhere reviewed in this Journal.

The annual oration, by S. D. SEELYE, M.D., entitled, "*Cell-life, the Basis of all Force, both Mental and Physical*," was, we are told, intended for a general audience. Especially in its opening and closing pages, it is rather ornate and flowery for strictly professional hearers.

In this hasty sketch we have been obliged to forbear noticing a number of papers and reports.

Some of our readers have deemed us hypercritical concerning typographical errors, bad proof-reading, and a careless or incorrect literary style. We therefore take especial pleasure in commending the complete freedom of this volume from gross faults of this sort. Its fair, clean pages are printed with nearly absolute accuracy, and are wholly free from those terribly ungrammatical and formless sentences, which, in some cases, have made the reader blush with shame for American scholarship.

The matter and the literary style are very creditable to the profession in Alabama, and to the gentlemen who have so well performed the toilsome and

thankless task of superintending publication. Especially in view of the unhappy social and political troubles which have so long oppressed the State, the issue of such Transactions is a subject for admiration.

3. *Transactions of the Medical and Chirurgical Faculty of the State of Maryland.*—The annual oration, by Hon. L. H. STEINER, M.D., upon "*The Model Physician*," is good in matter and style. In it, however, we see again illustrated a curious trait in medical addresses, which we have elsewhere adverted to—a proclivity to begin far back. Thus the origin of the three learned professions is here directly traced to the fall and disgrace of Adam and Eve. Once well clear of the somewhat hazy antediluvian epoch, Dr. Steiner's exposition of the aims, traits, and qualifications of a good physician is worthy of praise and imitation.

A *report on surgery*, by Prof. C. JOHNSTON, contains a description of a new splint for fractures of the lower extremity, called by its inventor, Dr. T. W. Simmons, the suspenso-extensory splint. The Esmarch bandage, galvanic cautery, and recent observations and ideas as to cancer, are the subjects specially treated.

In a *report on practice and obstetrics*, by Dr. JOHN MORRIS, the dietetic and medicinal use of alcohol is discussed. The writer's view seems to be that this agent should never be employed, though he does not speak quite positively.

In a *report on materia medica, etc.*, by Dr. S. C. CHEW, attention is called to the croton-chloral hydrate, and to the Australian tree, "*Eucalyptus globulus*."

The climate of Baltimore, with its relations to the death-rate, is shown in a report by Dr. PENROD for each month of 1871, 1872, 1873, and part of 1874, by meteorological tables, and by a well-drawn chart.

The recent researches, experiments, and conclusions of Ferrier and Nothnagel, upon cerebral physiology, Benedikt on the nerves of the inferior choroid plexus, and Bernhardt on the connection of certain convolutions with certain muscular movements, form the subjects of a report by Dr. F. T. MILES.

In a *report on psychology*, by Dr. ARNOLD, some remarks upon intemperance are made, in which the ground is taken that the taste for alcohol is a natural one, not to be extinguished by legislation, that the crimes due to excess have been grossly overstated, and that the proportion of persons abusing the stimulant has been equally exaggerated. Often, the writer believes, men drink to excess because they are weak-willed, and sensual, and wretched, and hungry, and hopeless, and not, conversely, that they are miserable, and weak, and degraded because they drink. We think there is a truth in this view of the matter which has been sadly overlooked. The fanatical reformers begin at the wrong end. The indulgence of low appetites is to be controlled by cultivating and developing higher faculties. Were it possible utterly to annihilate all the alcohol in the world to-day, can any one believe that the low animal appetites and propensities would fail to find other, and mayhap worse, means of gratification?

In an address upon the *pathology of inebriety*, Dr. JOSEPH PARRISH exhibits the facts and arguments which show drunkenness to be, often at least, a disease, and, consequently, to call for medical treatment and gentle restraint rather than punishment.

Dr. P. C. WILLIAMS gives three cases in which uterine hemorrhage was promptly stopped by *subcutaneous injection of ergot*. Half a drachm of the fluid extract was injected on the inner aspect of the thigh. Other means, including ergot by the stomach, had been vainly tried.

Dr. FRANK DONALDSON contributes a brief but well-written and interesting paper on the *significance of the presystolic murmur*. A case of his own suggested, and reading confirmed, the idea that such murmurs are not caused by contraction of the heart-valves, but by abnormalities in the ventricular cavity itself.

A paper by HENRY R. NOEL, M.D., epitomizes our knowledge of *leucocythæmia*.

Prof. C. W. CHANCELLOR states the need of higher educational standards for graduates in medicine, and proposes a plan, of which the important feature is the placing of the degree examination wholly in the hands of a disinterested board to be appointed by the State medical societies.

One of those terrible cases of deformity resulting from falling from a ship's rigging, while at sea and remote from surgeons, has been seen and treated by Dr. McLANE TIFFANY. The humerus and one thigh were each broken, and the other thigh fractured in two places. After more than two months, union was everywhere firm, and nearly complete ankylosis existed in one knee and elbow, and the feet were respectively widely everted and inverted. One fracture in each thigh was reproduced under ether, and the feet brought into their proper attitude. Shortening of the limbs could not be overcome by extension. Motion of the elbow was recovered by breaking adhesions. A good recovery followed, except in one knee-joint, upon which tenotomy is yet to be performed with good hopes of regaining motion.

Dr. J. SUMMERFIELD CONRAD presents a carefully prepared account of the varieties, course, circumstances, and treatment of some twelve hundred cases of smallpox, observed in the Marine Hospital at Baltimore during the recent epidemic. The temperature, at and before the onset of secondary fever, is shown for a dozen selected cases by charts. The mortality among all the cases amounted to forty-two per centum. The treatment adopted was generally mildly antiphlogistic at first, and afterwards tonic and stimulating. Several specifics were tried, without effect, except in the case of the "vinegar treatment." This, used in the way advised by Dr. Roth, seemed greatly to lighten the secondary fever, besides often causing the eruption to abort, and preventing troublesome throat symptoms.

Many instances were met with in which the disease attacked persons who had recently been repeatedly vaccinated without success. Experience taught that even a successful vaccination would not modify the course of variola, unless it preceded the eruption by from nine to eleven days. As to the supreme value and importance of vaccination as a preventive of desolating epidemics of smallpox, Dr. Conrad's experience has fully confirmed his original convictions.

4. We find in the *Transactions of the Medical Society of the State of West Virginia* another example of the fondness of medical orators for beginning at the beginning. The presidential address takes us from the garden of Eden, through ancient Egypt and Greece, even unto Western Virginia. Reference is made, in passing, to Jupiter, Pluto, Apollo, Esculapius, Pythagoras, Empedocles, and Hippocrates, after whom, and glancing at the old alchemists, we come down to Lord Bacon and modern times.

In this connection—for here are found the worst instances of the fault—we must protest against the gross negligence of the proof-reader, or other person superintending publication. Such mistakes as "desseminated" for "decimated," "Arganouts" for "Argonauts," "Aristottle," "Ptolmy," and "Pinnel," are

inexcusable, and are not calculated to give a very good impression of the literary culture of American physicians.

Dr. R. W. HAZLETT treats of the *diagnostic value of urine in disease*, with the indications thus obtained for medication. The article may very probably have served a useful purpose in drawing attention to a point too often neglected. Illustrative cases are given which are both interesting in themselves and adapted to the object in view. One instance of urine loaded with fat, to the amount of one-fifth or one-fourth, is briefly mentioned. Decided symptoms of scurvy were in one case caused by rigid adherence to a diet of unbolted wheat bread. A remarkable instance is narrated of recovery from advanced Bright's disease. The patient was a soldier. Treated with tincture of iron and spirits of nitre, he grew steadily worse, and was sent home to die. In two months he returned to camp well. He had continued the medicine at home, but had added thereto an inordinate amount of whiskey—which leads the writer to surmise as to the possible virtues concealed in the "mysterious chemistry of modern whiskey."

A *report on medical botany* by Dr. E. A. HILDRETH gives in half-a-dozen pages the description and alleged uses of some two score of native plants. In only a few cases is the chemical composition stated, and in none are any tests given of the physiological action of the articles described.

Several cases of *strangulated hernia* are fully described, and suggestively commented upon by Dr. H. W. BROCK.

Dr. JOHN FRISSELL gives the particulars concerning twenty-eight cases of *cancerous tumours*, and a few of other surgical diseases, occurring in his practice.

Two instances of *rupture of the uterus* during labour are contributed by Dr. J. C. HURP.

5. The present number of the *Transactions of the Medical Society of the District of Columbia* is the third number of the first volume. In noticing its predecessors our readers may remember that we directed attention to some admirable rules which were to govern the publishing committee. We are sorry these rules are not printed with each number.

A full and somewhat warm discussion upon *femoral hernia*, with individual ideas as to what is or is not good practice in certain circumstances, follows the report of a case.

An equally animated debate occurred upon a case of *spontaneous rupture of the aorta*. The crack was so sharp and clean, and the vessel so little diseased, as to lead to the suggestion that it was a cut and not a rupture.

An abdominal tumour proving fatal to a girl of nine years was reported as *cancer of the ovary*. The record of the autopsy says, "the right ovary seemed to be the origin of the tumour."

Chorea occurring during pregnancy was the subject of debate through two meetings. Much diversity of opinion existed as to the connection between the disease and the state of the patient. The propriety of bringing about premature delivery, in severe cases, was warmly supported and opposed. The whole subject of chorea was ably and fully discussed.

6. *Transactions of the New Hampshire Medical Society*.—After the usual record of the business of the annual session, we find the *annual address* by the President, Dr. JOHN L. SWETT. After referring to matters of interest to the society, and making graceful allusions to members recently dead, the speaker passed to his chosen subject, the duties of physicians in regard to alcoholic preparations. Not only in our own country, but in Russia, France, and Great

Britain, has intemperance attracted of late the deepest and most thoughtful attention. The British Parliament and our National Congress have appointed commissions to make investigations. In remarkably well-chosen words, the speaker makes an exhaustive argument against alcoholic beverages, denying the uses claimed for them, and vigorously exhibiting the evils, direct and remote, which follow their abuse.

An oration by Dr. S. M. DIXSMOOR, upon quackery, deals chiefly with that less-recognized, but, alas, not less real, variety, found in what are called the regular ranks. We can fancy one after another of his hearers wincing, as the sharp point of the Dr.'s blade was in turn directed against the weak spot in each one's armor. Flattering old women, and yielding to whims, sacrificing private convictions to public opinion, exaggerating the gravity of cases, producing abortion, giving articles like alcohol in the face of modern discovery of their harmfulness, and improper conduct in consultations, are the chief directions in which *regular* quackery is exhibited.

Dr. C. P. FROST reviews the progress of ideas in regard to *tuberculosis* and *pulmonary consumption*.

In a very fresh and instructive manner, Dr. J. R. HAM treats of the *changes in our climate, and their effects upon disease*. It is not found to be true, as generally supposed, that our average amount of rain-fall has been diminished, nor our average temperature affected, by the destruction of forests. Warm and cold years appear in groups and cycles, governed by some other cause. In some of the very districts most stripped of their forests, the rain-fall is actually increased. This, too, probably depends on remoter causes. Correct records cover too brief a period to be conclusive or satisfactory. The humidity of the atmosphere, however, may and does vary independently of rain-fall. Felling forests, cultivating and draining lands, and building canals and railroads have diminished the moisture of our atmosphere. The shade of great woods prevents the hot sun from at once sucking up the water into the clouds. The undisturbed soil does not suddenly turn the rain off into the rivers. While we have no right to attach supreme importance to our climatic conditions in causing or modifying diseases, the writer believes the diminished humidity has lessened the amount of pulmonary disease. Our three great cities show a steady decrease through each decade from 1810 to 1850, in the proportion of deaths by consumption to the total deaths. In the forty years the decrease is about one-third.

An infant suffering under *exstrophy of the bladder* was shown to the society by Dr. A. H. CROSBY, who here describes it. Operative interference was intended.

Interesting and well-written obituary notices of two eminent men, Dr. W. W. Brown and Prof. Dixie Crosby, prepared by Drs. L. B. How and C. P. Frost, occupy the remaining pages. To the notice of Dr. Crosby is appended a touching and discriminating tribute from Dr. Albert Smith, long his professional colleague and friend.

If this little volume contains an undue portion of addresses and other matter not especially practical or wholly novel, we must yet admit that the papers are excellent of their kind. One surgical case of amputation for *osteo-sarcoma*, and a report from delegates to the National Association, we have omitted to notice.

The literary and typographical execution of the work are alike admirable.

7. The presidential address, which begins this volume of the *Transactions of the Indiana State Medical Society*, upon *Alcohol and its Uses*, again

reminds us of the fact that physicians throughout the land are exhibiting great interest in this subject. Scarcely a single number of medical society transactions do we take up without finding papers and discussions concerning it. Though narrow and extreme views are often expressed, we welcome the prevailing interest as one sure to result in good.

Considerable space is given to a report on the medical history of the State. The paper is made up of communications from professional veterans in various districts. It contains many curious and entertaining reminiscences, and is not without value to students interested in the theory of "change of type" of disease.

A brief report on *cerebro-spinal meningitis* does not recognize any anti-hygienic conditions as exerting any special influence on the disease.

Camman's stethoscope is spoken of by Dr. LAUGHLIN as a valuable aid in detecting crepitus in fractures.

Dr. E. S. ELDER contributes a carefully written account of the *morbo lacteo*, or *milk-sickness*. An excellent feature of these "Transactions" is the abstract given of the discussions which followed the reading of papers. From this we learn how far the author's views are shared by others around him. The reality of this peculiar malady seemed to be generally admitted.

Dr. S. S. BOYD, writing of the tincture of *veratrum viride*, warmly advocates its employment, in half-drachm doses, in puerperal convulsions. An addition of laudanum, five parts to three, is commended.

Dr. JAMES THOMPSON treats of *intra-ocular diseases*. The article contains some interesting cases, with a number of coloured lithographic plates of pathological appearances. Without possessing any claims to originality, the paper may serve a useful purpose to the general practitioner.

Dr. WM. H. BELL directs attention to *epilepsy as caused by uterine disease*. The discussion that followed the reading of the paper elicited what we fancy to be the truth—that such causation is possible, but in point of fact not frequent.

Several other papers, cases, and biographical notices, go to make up a volume of average interest.

It is a pity a little more attention had not been paid to the proof-reading of this otherwise handsome and creditable work.

B. L. R.

ART. XXIX.—*The International Scientific Series. Responsibility in Mental Disease.* By HENRY MAUDSLEY, M.D., etc. 24mo. pp. 313. New York: D. Appleton & Co., 1874.

The present volume well sustains the high character of this admirable series. It is not for any absolute originality of thought or novelty of information that we would commend it—for of these, it, perhaps, contains little which may not be found elsewhere. Indeed, unless we remember the design of the publication, we might almost incline to accuse our author of repeating himself. Bearing in mind, however, that the purpose is to convey accurate knowledge and advanced views, not alone to physicians and savans, but to all intelligent readers, repetition ceases to be censurable.

Few subjects so frequently and powerfully excite the public wonder, sympathy, or indignation, as the questions of responsibility which arise in connection with crimes of exceptional horror or extraordinary circumstances. Seldom a week passes without some terrible deed chronicled in the newspapers, con-

cerning which some doubt is suggested as to the sanity or responsibility of the culprit. And yet, among people of considerable culture and intelligence, there still obtains an almost total ignorance of the principles which should determine whether our sentiments towards the evil-doer should be those of abhorrence and indignation, or rather those of profoundest pity and sorrow. This lack of knowledge is all the more to be deplored since popular religious views prompt to severe judgment and vindictive punishment. So long as, through capital punishment, questions of life and death are to be determined by the opinions of twelve ordinary men, so long, surely, will it be of supreme importance that such men shall have, at least, the opportunity of acquiring correct views of the connection between organization and conduct. At present the acquittal of bad men who contrive to enlist popular feeling on their side and against their victims, or, still worse, the conviction and death of poor irresponsible wretches whose crimes provoke no sympathy, are lamentably dependent on the cleverness of counsel working upon vulgar prejudice and passion, and not on a comprehension of the well-ascertained facts of science.

Although the especial topic of this book is correctly indicated by its title, it will yet be perceived that, as addressed to general readers, its scope implies and requires an exposition of the characters, manifestations, causes, and consequences of insanity. In other words, the reader must know what insanity is before he can appreciate its connections with responsibility. In the performance of this most important preliminary work, rare skill and tact have been displayed. The actual traits of lunacy are depicted with remarkable clearness, while vulgar misapprehensions are exposed and corrected with great felicity of statement and illustration.

We would not be understood as commending Dr. Maudsley's book to the unprofessional reader only. To the general practitioner whose leisure does not suffice for the perusal of a dozen treatises on insanity and medical jurisprudence, it offers the best opportunity yet provided to gain an intelligent and satisfactory understanding of mental disease in its relation to responsibility.

In the introductory chapter we find a reiteration of the author's well-known views to the effect that, so far as we know, mind is solely a function of brain. Nothing that we recognize as mental manifestation, whether thought, will, or emotion, occurs otherwise than through cerebral activity. Disorder of mind results only from disorder of brain.

The writer adverts to the erroneous conceptions commonly had of insanity, and to the feeling of repulsion or dislike too generally awakened by the presence of this disease. This aversion, and the neglect and unkindness which were its fruits, are traced to what Dr. Maudsley terms the "theological and the metaphysical spirit." Contempt and harshness toward the body, as something alien and opposed to the spirit; vehement assertion of the total independence and rightful supremacy of mind; and until quite recently general belief in demoniacal possession, are mentioned as manifestations of this spirit which have harmfully affected the treatment of the insane.

The psychological method of investigation is wholly unfit to elicit truth concerning madness, which is a physiological disturbance. Not by shutting himself up in his closet and scrutinizing his own consciousness, shall a man arrive at true knowledge of this disease. The inductive method, pursued in the close study of many actual cases, is the right road to correct ideas of insanity.

Hereditary influences; intellectual and moral degeneracy from defective organization; the degree to which inherent tendencies can be modified by education; the existence of a criminal class in which an irresistible impulsion towards vice goes along with stunted growth of mental and moral faculties,

from generation to generation—these are some of the points which are treated in this interesting chapter. Knowing very well that many good people take alarm at any conclusions which tend to lessen individual responsibility for wrong-doing, Dr. Maudsley takes occasion to remind them that life-long confinement in a hospital, whether called and intended as punishment or not, is practically no light penalty. This, society has a right to enforce against the homicide or the perpetrator of repeated crimes, for its own protection. And whether as regards the culprit it be looked upon as vindictive or simply precautionary, is of very secondary importance.

In a chapter styled *The Borderland*, is set forth the truth that sanity and insanity are not separated by any sharp and finely drawn line. Health and disease shade into each other. It is also shown that different nervous affections are sometimes convertible. The relationship and interchangeability of mental with other forms of nervous maladies is clearly stated and happily illustrated. The kinship between insanity and those exceptional developments of character which have made men reformers, prophets, and founders of religions, is admirably exhibited. In illustrating prophetic madness, however, it might have been more politic for Dr. Maudsley to confine himself to Mahomet. We fear that his intimations and proofs of the lunacy of some of the grand old Hebrew seers may injure the usefulness of his work to many readers. The intention was simply to show how a great but one-sided mental or moral development may make a man a genius, or a madman, or a combination of the two.

That a deficiency or perversion of the moral sense, with little intellectual impairment, is often the bequest of an insane parent to a child, is a fact very strikingly illustrated. Of course the knowledge of this truth should affect our judgment concerning the crimes of persons apparently sane, but of insane descent. Conscience is a matter of organization, as much as intellect is. Moral idiocy is, *à priori*, no more wonderful or improbable than intellectual idiocy. The dependence of the moral sense upon cerebral structure is still more strikingly shown by its destruction than by its non-appearance. Thus, as a result of cerebral disease we often witness the most startling revolutions of the emotional nature.

These considerations, and others mentioned by our author, are designed to show that there is a very large class of cases where the relative potency of disease and of vice is open to question. Punishment, in these, should certainly not be vindictive.

In the next chapter Dr. Maudsley describes the different forms of mental derangement, and the methods of classification. The mention of affective insanity gives occasion for a brief but most vigorous assertion of the right and duty of medical men to speak with authority upon questions of mental affections. The presumption of those legal and judicial luminaries who would ignore the results of study and experience, is very happily exposed.

In the fourth chapter, entitled *Law and Insanity*, our author gives a brief summary of the English law in regard to mental disease, with all its obscurities, irrelevancies, and conflicts, a sad picture, truly, and especially remarkable for the ignorance displayed of the real nature of insanity, and for the obstinate resistance against every attempt to admit the light of increasing knowledge. In terms of high commendation, Dr. Maudsley calls attention to some decisions recently given by the Supreme Judicial Court of New Hampshire, which, he very justly says, "are an advance on any judgment concerning insanity which has been given in this country (England)." He might have used still stronger language without exaggerating the extraordinary insight they display respecting the relation of insanity to crime, or over-estimating the significance of their

sharp discrimination between the functions of the judge and of the expert. With remarkable force and boldness they show, for the first time, that, contrary to the fundamental principles of the common law, the former has been constantly encroaching on the latter, with the natural consequence of perpetuating ignorance, confusion, and inhumanity. Dr. Maudsley might have truly said, that the cases of *Boardman v. Woodman*, *State v. Pike*, and *State v. Jones*, have created a new epoch in the law of insanity, in which all the tests of responsibility, old and new, are swept from the courts, and the question of insanity, like any other question of fact, remitted wholly to the jury. The judge is confined to his original and proper sphere, and the jury regain their rightful control over all matters of fact. Henceforth, in New Hampshire, and at no distant period we trust wherever the English law is administered, we shall cease to hear the court instructing the jury, in criminal cases where insanity is pleaded in defence, that if they are satisfied the prisoner knew right from wrong, or was aware that his deed was contrary to the laws of God or man, or yielded to an irresistible impulse knowing it to be wrong, or was merely acting from a delusion which if actually true would not have justified the act—they are to find him guilty. Instead of this we shall hear the court telling the jury that it is for them to decide, from the evidence submitted, whether the prisoner is sane or insane; and if they find him insane, whether the act done was the offspring of such insanity. How far responsibility may be affected by certain forms of disease, how far judgment and discretion may continue in connection with gross delusion, how the amount of understanding is to be measured in cases of imbecility or dementia—these are questions which the jury must decide for themselves, without the aid of rules of law, or any dicta of courts.

The importance of this great change in the mode of administering the criminal law of insanity can be justly measured only when we consider that the fate of many a man has hung upon rules so destitute of uniformity that no mortal could predict, in any given case, which would be adopted by the court, so that it was an even chance whether his defence would be of any avail or not. What was pronounced to be sound law in one State was just as authoritatively adjudged unsound in another; what was considered a true and binding exposition of the law at one period lost all claim to respect at another, and conflicting views might proceed from the same bench on the same occasion. It is, therefore, with no little pride of country that we hail this signal innovation upon the doctrines and practices of the past, and we are sure that the names of Perley, Doe, and Ladd will be held in grateful remembrance by every friend of humanity.

The next two chapters are upon partial insanity, one treating of affective, and the other of intellectual, disorder. Where insanity affects the whole being, in a manner obvious to the most careless observer, the question of responsibility scarcely arises at all. It is when some faculties or groups of faculties seem little disordered, that doubt and discussion arise, and that the greatest medical skill and experience are alone able to give the proper answer. The popular mind is curiously unable to conceive of insanity under other than its most demonstrative forms. Especially is it unwilling to admit the possibility of a mental disease which may dominate a man's conduct, and yet leave his reasoning powers apparently sound. The treatment of this difficult subject by Dr. Maudsley is well calculated to enlighten and convince any intelligent reader.

The very gradual and insidious growth of many attacks of partial insanity is often the cause of the disease not being recognized previous to the act which brings its subject under accusation. Often has time proved the accuracy of

the physician's judgment, by developing into indubitable madness the slight and early symptoms of disorder. Too often the gallows has rendered such proof impossible.

The absurdity, as well as wickedness, of the brutal counsel of an English lawyer that homicidal lunatics be hung, as a warning to others, is admirably exposed. In this connection Dr. Maudsley makes a strong argument against capital punishment. Perpetual imprisonment is perfectly justifiable, when the culprit has taken or endangered life. If after being sentenced to imprisonment for life as a murderer, subsequent developments change the wording of the sentence into life-long confinement as a lunatic, then the prisoner's family are freed from a great disgrace, and society is still protected, and the prisoner, if ever sensible of his condition, learns that he is not looked upon as a common criminal. If, however, the wrong-doer be promptly executed, the stigma of a crushing disgrace remains upon him and his people, and upon the court rests the burden—too often—of a judicial murder.

One thing, however, must be made certain and imperative, before juries can be expected to give proper consideration to pleas of irresponsibility on account of disease: and that is that the public shall be perfectly protected against the possibility of a repetition of the misdemeanor. So long as men are acquitted of murder on the ground of insanity, and are then at once or in a few months or years set at liberty, so long will the true and honest representations of the expert be met with incredulity, suspicion, and contempt. It is a terrible thing to say, but, owing to the facility with which pardons are granted it is true, that we are never sure of our safety from great criminals, sane or insane, until they are executed. Often, their execution would be a terrible wrong. Practically, their imprisonment results in a greater wrong. Witness the case of the wretched boy in Massachusetts. Here was a case of the most diabolical and murderous impulses, wholly uncontrollable by the better nature, and acted out to the bloody end. Yet, because, under the closest surveillance and complete absence of all tempting opportunities, the unhappy lad did not continue to exhibit his peculiar mania, men who call themselves philanthropists obtained his liberation. Upon their heads, and upon none other, rests the guilt of the innocent blood shed in consequence of their act. We need not, however, go away from home to find instances of similar atrocity. Strange indeed it is, that juries will in one breath proclaim that a prisoner is subject to a disease which has caused him to do murder, and in the next will petition for his freedom to exercise his propensities without let or hindrance! The very men, too, who will set free a man whom they have decided to be a homicidal lunatic, will be ever prompt to sneer and gibe at the physician who finds in some poor, friendless criminal, indications of disease which annul or diminish responsibility.

Considering, with Dr. Maudsley, the "tyranny of organization," how great the influence of hereditary and other congenital causes must be, and how potent are the effects of education and circumstances, we agree with him in believing that society has a perfect right to protect itself against all evil-doers by imprisonment, but has no right to take life. The danger, and the right and duty of protection, are obvious; the responsibility must always be questionable.

The different forms in which the two classes of affective insanity—impulsive and moral—are manifested, are clearly described and illustrated. The connection of epilepsy with insanity and with acts of violence, is well stated. The reality of homicidal and other impulsive forms of madness, and of "moral insanity" in general, is most forcibly exhibited, and illustrated by cogent examples.

In treating of the intellectual form of partial insanity, Dr. Maudsley begins

by remarking that while impulsive mania is sometimes met with in a mind otherwise unimpaired, yet, more frequently, its victim is more or less subject to melancholia, or morbid suspicion, or actual intellectual delusion. The extraordinary skill displayed very often by the partially insane in concealing delusions, for months together, from the closest and most skilful observers, is adverted to as supporting the truth that a crime may really be the fruit of an insane delusion, even when the latter has been wholly unsuspected.

The very dangerous character of all those cases in which a person believes himself to be the object of systematic persecution or annoyance, is well shown. Premeditation is demonstrated to be in no manner inconsistent with insanity. The great danger of recurrence in homicidal mania is forcibly illustrated.

A very able and convincing argument is here made to establish the doctrine that partial insanity annuls responsibility, even when no connection is apparent between the disease or delusion and the criminal act. Indications of a spirit of revenge, or well-planned efforts to escape, are shown to be by no means incompatible with the insane origin of a crime. The practical absurdity of the rules by which metaphysicians have sought to weigh and measure the degree of culpability to be attached to the deed of a partial lunatic, is thoroughly exposed. The true doctrine—that responsibility is destroyed by even partial insanity—is an induction from the observation of experienced observers, and no mere fanciful theory or whim. The delusion of a wrong-doer may be perfectly concealed, or it may lead to the crime through some unimagined connection, or the range of mental disturbance may be much wider than we had supposed, so that we can never safely assume that an insane man's crime was wholly independent of his disease. Dr. Maudsley truly remarks that even the skill and the opportunities of the hospital physician do not always avail, during months of watchful observation, to bring fairly to light delusions whose existence is known. It should seem unreasonable, then, to require that the precise bond of union between disease and crime be brought out with perfect distinctness by an expert who has had but a few formal interviews with the prisoner. The popular assumption, moreover, that a madman's reasoning and conduct are always logically correct and consistent as proceeding from his false premise, is wholly untrue. His reasoning is often as false as his premise. Dr. Maudsley also justly observes that a so-called monomania rarely lasts long without becoming complicated with more or less disturbance of the mental faculties in general.

Chapter seven contains a lucid though condensed presentation of the facts regarding insanity and crime, in connection with epilepsy. Crimes committed in a state of somnambulism, or during vivid dreams, or when suddenly awakened from sleep, are also clearly explained and illustrated.

A chapter upon senile dementia, as affecting responsibility, calls for no special comment, except to commend the opinion, boldly stated, that in cases of questionable competency such as arise in regard to the wills of aphasic persons, each individual instance should be judged by its own characters, rather than by dogmatic generalizations.

The closing chapter, upon the prevention of insanity, is full of just thought and wise suggestion. Its profound reflections on education and the formation of character; on what constitutes a true and full development of man's nature, and what a false and one-sided one; its estimate of the actual results of religion, as we see them around us, contrasted with its ideal and legitimate effects; its picture of the influence of improper marriages, and of intemperance: all these make excellent and profitable matter for all thoughtful readers.

The entire work is good, both in design and treatment, and adapted to give, to lay readers as well as medical, just notions concerning a subject most generally and most grossly misunderstood. B. L. R.

ART. XXX.—*On Mycetoma, or the Fungus Disease of India.* By H. VANDYKE CARTER, M.D. Lond., H. M. Indian Army. Quarto pp. xii., 118. London: J. & A. Churchill, 1874. (With eleven coloured plates.)

MYCETOMA, or the *Fungus Disease of India*, is the name employed by Dr. Carter for the curious affection which has at various times been described under the names of Madura foot, Fungus-foot, Podelkoma, Godfrey and Eyre's tubercular disease, etc., and which, as shown by the author in the very handsome volume now under consideration, "results from the growth within the textures of the human body, of a simply organized vegetable parasite," the *Chionyphe Carteri*, as it is designated by Rev. Mr. Berkeley, who has identified the plant by its botanical characters.

Dr. Carter, who is already known to our readers by his excellent little book on the microscopic structure of urinary calculi, which it was our pleasant duty to notice in the number of this Journal for April, 1874 (p. 491), has divided his present work into five sections, which treat respectively of the local and general characters of mycetoma, its pathology, its prognosis and treatment, and its natural history. A copious bibliography is given in an appendix, and full descriptions of the plates, and an index, terminate the volume.

Two varieties of mycetoma are described by the author, one the *Melanoid*, characterized by the presence of fungus particles of a *black* or dark-brown colour, and usually of *hard* consistence (hence called *Sclerotia*), and the other, or *Ochroid*, variety, containing *pale* particles, pink, brown, or yellowish in colour, and called *Malacotia*, from their *softness*. The disease, though most common in the foot, has also been observed in the hand, and might, doubtless, occur in any part of the body into which the peculiar spores or germs of the chionyphe should happen to penetrate. Close analogies are pointed out by Dr. Carter, between mycetoma and the disease produced by the presence of the *Filaria medinensis*, or Guinea-worm, and it is clearly shown that though superficially resembling the perforating ulcer, or *mal perforant du pied* of French writers, it has really nothing in common with that affection. When fully developed, mycetoma produces enormous swelling of the part, the fungus growing and burrowing both in the soft tissues and in the bones, and giving rise to abscesses which leave sinuses discharging the black or pale particles peculiar to the disease. The only natural termination of mycetoma is in death from gradual exhaustion, no instance being known of spontaneous recovery: the treatment consists in excision, if the disease is recognized at an early stage, or at a later period in amputation, which under these circumstances appears to be attended with very little risk. In removing the limb care must be taken to apply the knife at such a point as to insure the complete ablation of the fungus, as, should any particle remain, recurrence of the disease would be probable.

From the author's account of the *mode of growth of the entophytes*, we extract the following:—

"On the most cursory examination of the peculiar characters of this disease, it becomes obvious that one must start with the assumption that 'spores' or 'germs' are, in some way, introduced beneath the skin of the affected member. As to the *mode* in which this is possible, it is sufficient to repeat that there are natural openings in the integument, particularly abundant in the sole and palm (where probably the disease oftenest begins), through which such reproductive elements, in the form of *Conidia*, *Amœboid cells*, or *Bacteria* might readily enter. . . . But it is also obvious that . . . any small artificial orifice, as puncture or abrasion, would serve for passage equally well; and, in fact, not uncommonly patients attribute this disease to the prick of an *Acacia*-thorn, etc. The soil of both field and lane in India, so invariably swarms with decaying vegetable matter, and this at certain seasons in a moist condition, that one can only wonder that the bare-footed native does not far oftener become affected with the fungus disease. In general terms it may be said, that the spores or germs of *Chionyphe*, however introduced, become developed amid the tissues, away from light, but plentifully supplied with oxygen, nitrogen, and other food; and also favoured by moisture and a constant high temperature. . . . Commencing at some points upon the surface, the entophytic growth proceeds towards the deeper parts, and the whole mass of the foot may so be traversed; and as well adjoining parts of the leg itself: then, sooner or later, the growth tends towards the free surface of the skin, and by irritation of the deeper layer of the cutis, vesicles are caused, such as arise by the corresponding approach of the Guinea-worm on its way outwards; their rupture produces, and leaves, the peculiar apertures above described, and here escape the matured products of plant growth. The soft, elevated swellings of the skin, or abscesses, so-called, may be regarded, perhaps, as but exaggerated vesicles; and they have the same relation to the deeper-seated processes. These latter are attended with some irritation of the tissues, which leads, in those of the integument, to firm œdema and even hypertrophy, which may be considerable; the muscles in the course of the branching, fruit-bearing tunnels are necessarily destroyed, and they are also wasted by disuse: the ligaments and tendons longer persist, these and the fibrous aponeuroses, probably to some extent influence the direction of growth, but this does not appear of the bones, which frequently suffer to a large extent, and sometimes, I have thought, by preference: in all the last-named tissues, the attendant vascular irritation is slight, and not to be compared with that due to ordinary foreign bodies, or the more heterogeneous morbid products. . . . It is certain that a period of incubation must intervene, between inoculation and return to the surface, of the spreading growths; . . . that there is, besides, a seasonal period of exacerbation in growth, may be surmised, but this is not yet certainly known. The parent-fungus (*Chionyphe Carteri*) grows only at one season, . . . and, as I have above said, the habit may not be altogether lost in its pathological phases."

It would be unjust to conclude this notice without calling attention to the beautiful lithographic plates which fitly illustrate Dr. Carter's splendid volume. These are from drawings made by the author, and exhibit in a most graphic manner the appearances of Mycetoma, both externally and on section of the amputated limb, the mode of invasion of the fungus growth, the minute structure of the fungus particles in either variety of the disease, and the spontaneous and artificial development of the parent plant. The whole work is of great value, and reflects much credit upon both the ability and the industry of its author.

J. A., JR.

ART. XXXI.—1. *Beiträge zur Heilung des Parenchym- und Cystenkrebzes*, Von Dr. KARL STÖRK, Docent an der Universität in Wien. 8vo. pp. 71. Erlangen, 1874.

Contributions to the Treatment of Parenchymatous and Cystic Goitre. By Dr. KARL STÖRK, Docent at the University of Vienna.

2. *Études sur le Goitre Epidémique.* Par V. NIVET, Chevalier dans l'Ordre de la Légion d'Honneur, Médecin de l'Hôtel-Dieu, Professeur titulaire à l'École de Médecine et de Pharmacie, etc. 8vo. pp. 95. J. B. Baillière et Fils, Paris, 1873.

Studies upon Epidemic Goitre. By V. NIVET.

1. DR. STÖRK'S observations are based upon upwards of two hundred cases of goitre that have presented themselves at his clinic for diseases of the throat. Goitre is not endemic in Vienna, nor has it ever been epidemic there, as such a large number of cases might lead us to suppose; but the majority of these patients were natives of Styria and other mountainous provinces of Austria. The author does not weary his readers with perplexing etiological considerations, but at once plunging in *medias res* throws out some valuable hints, which will be referred to further on, how to arrive at a differential diagnosis in the more obscure cases of thyroidean enlargements, and concludes by giving a *résumé* of the various modes of treatment and operations hitherto employed for the relief of this affection. Interesting as Dr. Störk's experiments and observations with the different remedies and measures proved, a recapitulation of them here can safely be dispensed with, since most readers, either through other sources or by their own bitter experience, have some knowledge of how utterly nugatory nearly all of them are.

We doubt whether, at the present day, there exists a single case of struma that has not, at some period or other, been subjected to the external and internal application of iodine in some form or other; yet, unless the goitre be of recent origin and the individual young, this remedy will fail to reduce the size of the tumour, and in cystic goitre its action is absolutely *nil*; besides, there is not unfrequently induced a state of iodism with its attendant train of constitutional disturbances.

Dr. Störk likewise condemns the extirpation of a bronchocele unless the operation is imperatively demanded. Upon cosmetrical grounds alone he deems it never justifiable. The majority of his cases, however, applying for cosmetrical reasons only, he was compelled to resort to less hazardous measures. The injections of tincture of iodine seem to have given rise to such active inflammatory reaction as to lead to their early abandonment. The same valid objections are urged against the perchloride of iron injections. It now became the object of the author to seek some article which would enable him to dispense with those of such questionable utility. This he claims to have found in *alcohol*, declaring it to be a "heilung"—cure—for certain forms of goitre, viz., the soft parenchymatous and cystic varieties. When they are very firm, fibrinous, or when the capsule is ossified, then only does the alcohol fail to effect a cure. A Pravaz syringe is used in making the puncture and injection into the tumour; not more than one or two drachms of alcohol are thrown in at a time; the goitre becomes tense and hard; at intervals of several days these injections are repeated in different portions of the tumour. By pursuing this course of treatment the author found that he could very readily control the amount of inflammatory reaction, though a period of several months often elapsed before

a complete reabsorption of the struma was effected. Even in large cystic goitres these injections of small quantities of alcohol answered admirably. A few drops of tincture of iodine should, however, be added to prevent the possibility of fermentation taking place, as happened in one of the cases recorded. Aspiration of the cystic contents is considered as useless. The repeated injections of alcohol or tincture of iodine modify the secretion of the cystic walls, the colloid substance is gradually changed into a flaky product, coagulation occurring, the growth of the cyst is arrested, and its contents are finally so far transformed as to be capable of reabsorption by the mural bloodvessels. Schwalbe previously had suggested that the shrinkage induced in the parenchymatous goitres by the injections of tincture of iodine was attributable to the action of the alcohol and not the iodine it contained. To Stoerk, however, must be accorded the merit of having first acted upon this hint and thereby discovering and perfecting this method. Besides the mere coagulative action upon the colloid substances of the thyroid gland, alcohol also induces indirectly a shrinking of the connective tissue, an action that is well illustrated in cirrhosis of the liver. This well-known cirrhotic property of alcohol induced the author to try its effect upon enlarged lymphatic glands of the neck, and in the few cases in which it was tried, the alcoholic injections caused the complete reabsorption of the scrofulous glands. No disfiguring scar results from this simple method of treatment, and we have no doubt that its real efficacy both in lymphatic enlargement and in goitre will soon be established by further trials.

Large and conspicuous goitres, as a rule, give rise to much less serious troubles than the small and concealed tumours—goitre plongeant—which are either situated beneath the sternum, and thus compress the trachea anteriorly, or else arising from the lateral lobes and held down by the deep fascia of the neck, they encroach upon the sides of the windpipe. The lumen of the trachea, as seen in the laryngeal mirror, in these cases assumes the shape of the letter D. Stoerk also calls attention to the habitual stasis of the laryngeal mucous membrane, especially to that covering the arytenoids, which become succulent and relaxed.

Goitre-asthma and dyspnoea are not always attributable to tracheal stenosis, but are often due to the pressure of the tumour upon the vagus and its recurrent branches; "this pressure results in a kind of subparesis of both lateral crico-arytenoid muscles; these muscles are not paralyzed, but on closer examination it is evident that their action is slower than usual. The glottis remains relatively longer open than in persons free from goitre." A paralysis, not a spasmodic contraction, of the adductor muscle of the glottis is undeniably the factor of this form of asthma, and Dr. Stoerk believes, contrary to the generally accepted opinion, that an analogous condition of the bronchial muscles exists in asthma proper. He promises to demonstrate this theory in a forthcoming brochure, which will no doubt be as interesting and original, as are all his other papers.

2. The *studies upon epidemic goitre* are principally made upon those epidemics that have from time to time occurred among the troops in garrison in the Jura, Vosges, and other mountainous localities where goitre may be said to be indigenous. Nivet has studied and sifted the records of every epidemic of goitre that has occurred in France since 1783, described by Charmeil, down to the present day, and even the most incredulous will have to concede that the epidemic type has at times been assumed by goitre. This book is another illustration of the remarkable pliability of mechanical statistics, numerous tables of the analysis of drinking water, meteorological records, sanitary con-

dition of the troops, age, nativity, etc., are adduced to determine the etiological causes producing epidemic goitre. Many of these presumed determining causes appear very plausible, but the physiological functions of the thyroid gland will have to be better understood before they can be accepted. Nothing seems to be established beyond the fact that in certain localities, where goitre exists endemically, it may suddenly break out as an epidemic among large bodies of men stationed there. The presence or absence of iodine, of any of the mineral ingredients, in the drinking water, seems to be of no moment, but Nivet lays great stress upon the low temperature of the water, and regards as a predisposing cause, the drinking of cold water while the body is hot and sweated. How does it happen, it may be asked, that Americans with their universal use of iced drinks are so little afflicted with goitre? The chilling of the neck by currents of air, while the body is heated, is rather too frivolous a pretext under which to disguise our ignorance of etiology. Besides Nivet can hardly claim this idea as original, since the priority must be given to the person who long ago declared alopecia areata to be produced by a draft upon the back of the head.

These acute cases of epidemic goitre readily yield to the ordinary applications of iodine, very few of them becoming cystic.

R. M. B.

ART. XXXII.—*The Mechanism of the Ossicles of the Ear and Membrana Tympani.* By H. HELMHOLTZ, Professor of Physiology in the University of Berlin. Translated from the German, with the Author's permission, by Albert H. Buck and Normand Smith, of New York. 8vo. pp. 69. New York: William Wood & Co., 1873.

THIS handsome royal octavo volume of sixty-nine pages, containing the most important facts relating to the anatomy and physiology of the auditory apparatus, not only places in the hands of the English reading public the choicest work of the distinguished physicist of Germany, but is an honour to the translators, being an evidence of their scientific energy in translating a work, which, from its specific nature, must have, after all, only a limited circulation. It is an "Essay on the Mechanism of the Ossicles of Hearing and the Membrana Tympani, originally published in *Pflüger's Archiv für Physiologie*, Bonn, 1869, and is the only treatise in any language which enters fully into the anatomical, physiological, and mathematical aspects of the question, and will undoubtedly remain for many years to come the authoritative treatise on this subject."

The book is therefore one of great value to the scientific world at large, but especially to that part of it interested in otology.

It is divided into eight chapters, the first four being translated by Dr. A. H. Buck, and the remaining ones by Dr. Normand Smith. In the first, second, and third chapters we find the subjects treated of are respectively the *results due* to the small dimensions of the auditory apparatus, the anatomy of the membrana tympani, and the attachments of the hammer.

In the fourth chapter, "the attachments of the anvil," we find an explanation of the peculiar articulation existing between the hammer and the anvil. The author says (p. 33):—

"The shape of the last-named articular surface is usually described as resembling a saddle; it must be remarked, however, that, unlike the saddle, not only the convex sides come together to form a ridge that is almost sharp, but also

the concave; and the union of the two forms a continuous and almost flat surface on either side of the ridge. In order to gain a clear idea of the mechanism of this joint, it is better, I believe, to make use of a different comparison than that of the surface of a saddle. It is, in fact, like the joint used in certain watch-keys, where the handle cannot be turned in one direction without carrying the steel shell with it, while in the opposite direction it meets with only slight resistance. As in the watch-key, so here, the joint between the hammer and anvil admits of a slight rotation about an axis drawn transversely through the head of the hammer toward the end of the short process of the anvil: a pair of cogs oppose the rotation of the manubrium inward, but it can be driven outward without carrying the anvil with it."

This is one of the most important facts contained in the book, and forms the enunciation of one of the most brilliant and valuable discoveries of the author.

The 5th, 6th, and 7th chapters treat respectively of the movements of the stirrup, the concerted action of the bones of the ear, and the mechanism of the membrana tympani; and the 8th chapter is called the mathematical appendix, having particular reference to the mechanism of curved membranes.

In the sixth chapter we find the following definition of the concerted action of the bones of the ear:—

"If we suppose the hammer and the anvil, so united that their cogs press against one another, and both move like one compact body, exerting a pressure upon the point of the handle of the hammer, which is continued inward and transmitted from the anvil upon the stirrup, then the system of the two ossicles can be considered as a one-armed lever, whose fulcrum lies where the point of the short process of the anvil presses outward against the wall of the cavity of the tympanum."

The last two chapters are essentially mathematical, and can have very little interest for the general medical reader; their perusal, however, will repay any one who will take the trouble to follow the demonstrations emanating from such a distinguished source. Excepting these last-mentioned chapters, there is nothing in this work which every one claiming a physiological education should not know; and a complete mastery of all the facts in the book would be an attainment requiring no extraordinary labour, and would amply repay one who seeks it.

C. H. B.

ART. XXXIII.—*The Complete Handbook of Obstetric Surgery: or Short Rules of Practice in every Emergency, from the simplest to the most formidable Operations connected with the Science of Obstetrics.* With numerous illustrations. By CHARLES CLAY, M.D., Late Senior Surgeon and Lecturer on Midwifery, St. Mary's Hospital, Manchester, etc. etc. From the third London edition. 12mo. pp. 328. Philadelphia: Lindsay & Blakiston, 1874.

ALTHOUGH this is professedly a manual, it is not so in its whole extent; as it presents an article of twenty-four pages on "the term of utero-gestation," and another of twenty-eight on "ovariotomy." As Dr. Clay has had fifty years' experience as a practitioner, and has attended 14,000 cases of labour, his manual is a condensation of his views upon the numerous subjects of which he treats, and therefore differs from most handbooks so called, which are usually the compilation of comparatively young men.

As is generally the case in Great Britain, although a change has recently commenced in this respect, Dr. Clay advocates the use of chloroform, and makes no reference to that of sulphuric ether. He claims that it has never

proved fatal in a case of obstetrics, and believes that want of purity has had a great deal to do with its fatal results in surgical cases. He recommends, therefore, the preparation of Duncan and Flockhart, of Edinburgh. In this country, as a general rule, the sulphuric ether of Squibb, of New York, has the preference, on account of its much greater safety. In obstetric practice the use of anæsthetics has very much fallen into disrepute among the women themselves, as it is not always attended with happy results. With many subjects, unless pushed to entire insensibility, the pain is either not prevented, or, if so, the labour ceases for the time being; intoxication, or hysterical excitement, or a feeling as of a fearful nightmare, is induced; and in those in which a perfect relief from suffering is obtained, there is danger from post-partum hemorrhage, the result of uterine inertia. To obviate this last, it has been proposed to resort to the use of ergot in all cases where chloroform or ether is employed. In some women ether has a most perfect effect; and especially have we noticed this in very delicate subjects, who appeared to gain strength, be free from suffering, have abundant uterine power, and full contraction after delivery.

Cæsarean Section.—The author performed this operation upon a woman of 27, who was far gone in phthisis, and in whom vaginal delivery was impracticable, by reason of the pelvis being filled with a large fibro-cartilaginous tumour. Yet notwithstanding the character of the case, the woman survived until the fourteenth day. Although Dr. Clay has dedicated his book to, and lives in the same city with, Dr. Radford, of Manchester, the English statistician upon the Cæsarean section, he evidently is not well posted upon the record of cases. He says first, on page 50, "British and American cases combined have been stated at 54, of which 40 died and 14 recovered." And again, "The last statement of Dr. Radford, of British cases alone, amounts to 64; deaths 46, recoveries 18; children saved, 34." In Dr. Radford's statement, before the reviewer, are 98 cases, collected from Great Britain and Ireland, with 16 women and 56 children saved; and we have a list of 108, not including those of the last two years. Of these 108 women, 90 died, and 18 recovered; and of their children, 59 were saved, and 46 lost. We have also before us the results of 66 operations performed in the United States up to 1872, which resulted as follows: 36 women saved, 30 lost; 28 children saved, and 37 lost. Several of the last were delivered alive, and lived from a few minutes to three days.

This makes the record of the two countries as follows, viz.: Operations 174; women saved 54, lost 120; children saved 87, lost 83. Thus the United States, with 66 operations, saved double the number of women that our transatlantic brethren did, out of 108. The greater American loss in children is an evidence that the cases were by no means favourable for the operation; for in 18 operations performed within twenty-four hours, the results were 13 women and 15 children saved; and these 18 were all that were thus promptly performed out of the 66.

Cephalotribe.—Dr. Clay says this is rather a troublesome piece of machinery to manage, and so it would be if like his engraving, which bears little resemblance to the best instruments of its kind. He believes the crotchet more available in careful hands. This is not the general view of the day in cases of extreme deformity of the pelvis, and especially as to the result to the mother.

Puerperal Convulsions.—Little stress is laid by the author upon the subject of renal complications. Depletion to large amount is recommended. No mention is made of the use of the bromides. He holds the opinion that the os uteri should never be forcibly dilated, which is opposed to the practice of some of his London brethren.

Ligating Cord.—Dr. Clay gives a wood-cut to show how he ties the foetal cord, first with one end, and then the other of the same string, before cutting it, which he does at the same time with the funis. This is simple enough for the first knot, but a very awkward way to tie the second, as any one will see if he tries the experiment.

Forceps.—Dr. Clay, like most old obstetricians, has a pair of his own to recommend, the length of which, with its two-inch handles, is but ten inches. He also gives preference for those of Collins, Simpson, and Radford, the last with blades of unequal length. This chapter does not at all correspond with the teachings of most of our professors, and especially of those who believe that the instrument should have fenestræ and blades made to fit accurately the sides of the child's head, so as to command it without danger of cutting the scalp, and, if need be, making compression without special risk to the child.

Gestation.—The author advocates the theory, which he bases upon the results in a number of cases, that the duration is dependent upon the age of the subject; being shortest with the young and longest with the old; and that there is a definite term for different intermediate ages, not only in man, but in the lower animals, and in the time of incubation of eggs. He avers that the age is not to be calculated by that of the mother alone, but by the combined ages of both parents, divided by two, due allowance being made for the earlier maturity of the female, and that it is beyond the mean average when the woman is the senior. He does not believe that the cases of so-called prolonged gestation have been sufficiently well founded.

Page 189. "Any instrument for extraction is preferable to Cæsarean section." This will depend upon whether the prospect of saving life is greater or less than that offered by gastro-hysterotomy, which, in this country, has been more favourable than the general statistics of instrumental deliveries, in cases at or within a measurement of $2\frac{1}{4}$ inches in the conjugate diameter of the superior strait, are able to show. We believe an early resort to the Cæsarean operation would be much more favourable in its results.

Ovariectomy.—The author recommends the operation by the *large incision*; but his statistics, when compared to those of Keith and Spencer Wells, are not so encouraging. He reports 71 operations, with 49 recoveries and 22 deaths. Dr. Keith, 150 cases, with 84 recoveries in the last 100. Spencer Wells, 400 cases, and 78 saved out of the last 100. Dr. Keith makes use of McFarlane's sulphuric ether, made from methylated alcohol; and of 100 cases under its use, had favourable results in 87. Wells saved 293 out of his 400 patients.

The American reprint of Dr. Clay's work is quite convenient in size, and very clearly printed. The engravings make no pretensions to display, being merely, with a few exceptions, in outline, and are generally sufficiently correct for illustration. There are many points of excellence in the book to recommend it as one for hasty reference.

R. P. H.

ART. XXXIV.—*Second Annual Report of the Board of Health of the City of Boston, 1874.* 8vo. pp. 149. Boston, 1874.

It will, perhaps, be a matter of surprise to our readers to find that the chief city of Massachusetts—a State whose own Board has been for half-a-dozen years the model for all others—has only so recently possessed a municipal Board of Health. The fact we believe is, that the functions of such a body were included among the duties of the Mayor and Aldermen. Perhaps the

very excellence of the State organization prevented the need of a local one being more urgently felt.

The Board consists of a chairman, a clerk, and two other members, of whom one is a physician. Under, and appointed by, the Board are a Superintendent of Health, City Physician, Port Physician, and two Medical Inspectors.

We learn that a certain fat-rendering establishment, lately removed to an island two miles from shore, has continued to be a nuisance even in that location. The Board has power, and is using it, to compel improved methods, and if needful, to shut up the establishment.

The apparatus for emptying privies, known as the "Odourless Excavating," and recently tested in Philadelphia before the American Public Health Association, has been tried by the Board, approved in every respect, and earnestly recommended for adoption. Existing contracts prevent compulsion, but there is reason to hope that contractors will consent to employ the new system.

Appropriations have been made for public urinals, which will be established as soon as the consent of the municipal authorities shall be granted.

Street sprinkling should be mostly done at night, being thus more economical as well as otherwise preferable. The addition of disinfectants to the water is recommended. Sweeping should be also nocturnal, and by machines.

Infant mortality is adverted to as much too large. The percentage of total deaths, occurring during the first year of life, has been for the last year nearly twenty-five. We have not at hand recent reports of Philadelphia, but find in the same class for 1870—before smallpox epidemic—a proportion of 27.63 per centum. Pitiful details are given of the neglect and misery which form the hard lot of thousands of wretched infants in all great cities—a kind of wretchedness which not the best of Boards can wholly prevent or relieve, but which appeals to the pitying tenderness of the more fortunate classes, for personal help and succour.

Coloured charts, exhibiting the total daily mortality, and that by zymotic and by diarrhœal diseases, in connection with temperature, humidity, and rainfall; and others showing weekly mortality from ten principal diseases—are designed and executed with great clearness.

Crowded and unventilated school-rooms, and too many stairs leading to them, are indicated as requiring attention. The paper of Dr. Kedzie, upon schools, in the Michigan Health Report, is most heartily commended.

A most vigorous protest is made against allowing the continuance of the terrible nuisance of the slaughtering and rendering establishments on Miller's River, in East Cambridge, and against the opening of sewers into Charles River.

From a paper by Inspector W. L. Richardson, M.D., we learn that more than one-fifth of the city population live in registered "tenement houses." In these, however, the average accommodation is three rooms for four persons—a better showing we believe than is common. It is recommended that a carefully prepared law be drawn up and enacted for the complete control and regulation of tenement houses. Meanwhile, the writer offers suggestions which may enable landlords who have consciences, to improve existing houses and to build more intelligently. Great stress is laid upon the substitution of water-closets for the terrible vaults so long a source of disease and death. A cheap, simple, and it seems to us admirable, plan for ventilating cesspools, and preventing the escape of their gases into streets and houses, is illustrated by a diagram.

Evidence is here adduced—as formerly in a New York city report—that the building or rebuilding of houses for the poor on good sanitary principles, has proved a financial as well as humanitarian success.

Dr. F. W. Draper, also an Inspector, contributes a very excellent paper on

the registration of deaths, as it exists in Boston. The limitations and defects of the system are exposed, and improvements suggested. The paper may be profitably read by every physician who has to sign death certificates, and by all interested in registration. The registrar should be a medical man, and the bureau should be under the control of the local or general health-board.

Mr. J. M. Merrick has been employed to examine and analyze samples of common groceries, and other dietetic preparations.

Prepared yeasts were found to be practically pure and good. Baking powders, liberating carbonic acid, are believed to be less wholesome than good yeast.

Confectionery was found poisonously coloured often enough to warrant great caution in its use. Ought there not to be in every city some system of inspection of candies?

Sugars proved uniformly pure and wholesome. The so-called wine vinegar is made from whiskey. Sulphuric acid was largely present in some samples of "cider vinegar." Three out of four samples of pickles contained copper; and all, alum. Canned fruits were found to contain tin in considerable amount, with mere traces of lead and copper. Ale and lager beer were found pure. Only two samples of kerosene out of twenty-two could be deemed safe. The gross fraud of professing to render oils safe by adding secret powders to them, is here again exposed. Hair dyes were found to be all strongly impregnated with lead, and hence dangerous. Lotions, etc., for the skin, vary from perfectly innocuous to highly detrimental. Samples of ground coffee were found to be generally grossly adulterated. Cheap teas were found to be adulterated with clay and sand, and to consist in part of exhausted leaves. Pepper and mustard were mostly weakened with sand, flour, and turmeric.

Analyses of several specimens of well-water gave the most startling results, both as to the enormous difference in different wells, and the inferiority of all to the Cochituate water. One sample of well-water contained 116.6 grains of foreign matters to the gallon, while the aqueduct water had but 3.18!

B. L. R.

ART. XXXV.—*Recent Articles on Quarantine.*

1. *Extrait du Dictionnaire Encyclopédique des Sciences Médicales*, publié sous la Direction du Dr. A. Dechambre. Article, *Quarantaines*. Par M. le Dr. LÉON COLIN, Médecin Principal de l'Armée, Professeur d'Épidémiologie à l'École du Val-de-Grace.

Extract from the Encyclopedic Dictionary of the Medical Sciences, published under the direction of Dr. A. Dechambre. Article, *Quarantines*. By Dr. LÉON COLIN, Principal Physician of the Army, Professor of Epidemiology in the School of Val-de-Grace.

2. *Quarantine; General Principles Affecting its Organization* By S. OAKLEY VANDERPOEL, M.D., Health Officer of the Port of New York, etc. etc.
3. *Annual Report of the Commissioners of Quarantine of the State of New York*. Transmitted to the Legislature, January 6, 1874.
4. *Conclusions of the International Sanitary Conference, held at Vienna, July, 1874.* (*Supplement to the Medical News and Library*, November, 1874.)

DR. LÉON COLIN, in the cyclopedic article above named, truly remarks that the question of quarantine is one of the most complex in hygiene and medi-

cine. He deals exhaustively with the subject, giving its history from the Middle Ages, as divided into three periods: first, the period of leprosy; secondly, that of the plague; lastly, that of yellow fever and cholera. The second of these began about the end of the fourteenth century, and extended to the middle of the nineteenth. The last has followed, comprising the principles and applications of quarantine at the present day. Dr. Colin traces, step by step, the progress of experience, with the alternations of opinion; from the strong impression in favour of contagion, made by the work of Fracastor (Venice, 1546), to the comparatively late reactions effected by John Howard, in England, and by Chervin, in France, after their observations of plague and yellow fever, on the continent of Europe and in America. The evils of mediæval, and even of modern, quarantines and lazarettos are vividly portrayed. Their frequent total failures are fairly set forth. Material is given abundantly, in the 171 pages of this elaborate and well-digested article, for the refutation of all arguments ever advanced on behalf of personal quarantine, either against plague, yellow fever, or cholera. Yet (it seems to us) with Dr. Colin, as with many others on both sides of the Atlantic, support of exclusive measures of quarantine is so much a *foregone conclusion*, that no facts can quite displace it. But the modifications which the common sense and urgent necessities, as well as the humanity, of nations have from time to time compelled, are very instructive; and, for the future, they are encouraging.

The extreme of endeavour after the forced protection of men from men was exemplified at Digne, in France, in 1629, when the peasantry of the surrounding country deliberated upon the project of committing the plague-struck town, wherein were already fifteen hundred unburied dead, to the flames! They were only prevented from accomplishing this upon the invasion, by the plague, of four other towns in their neighbourhood.

The futility of "*cordons sanitaires*" against cholera on land, was amply proved in Europe, in 1831-1832. The horrors of the lazaretto became long ago so familiar as to lead to demands for *reform* of quarantine. Sanitary improvements have been demonstrated to possess power to abate very greatly the destructiveness of all malignant epidemics. Plague has disappeared from Europe. Why? Certainly not from increased rigor of quarantines. Yellow fever does not invade England. Dr. Colin rightly points out that this immunity is related to climate. Then yellow fever is clearly not a humanly contagious disease, but a *regional epidemic*, nowhere needing personal quarantine. Cholera was reduced immensely in its extension and fatality in London, Paris, New York, and Philadelphia, in its later visitations, down to 1866 and since. Again, why? Neither of these localities has *shut out* cholera by quarantine. Preventive local measures, belonging to *sanitary police*, have made this momentous difference.

Turning from Dr. Colin's able and valuable article to the other pamphlets and documents referred to at the head of this notice, further reason appears for the conviction, that, notwithstanding a very general, and, to us, almost unaccountable prepossession in its favour, the days of *personal* quarantine are numbered—it ought nowhere to outlast this century. Formerly, it was not uncommon to compel the residence of all persons detained at quarantine, on board of the condemned or suspected vessel. The time, at first, was forty days. Long ago this was variously shortened at different places, and, quite arbitrarily, on imaginary grounds, made of different lengths for plague, yellow fever, and cholera.

Now, as set forth by Dr. Vanderpoel, and by the Commissioners of Quarantine for New York, at the station provided for the protection of that city,

vessels suspected or known to have yellow fever or cholera on board are promptly emptied of their passengers, for sanitary inspection and purification. They are then detained for "observation;" in the case of yellow fever for five, and in that of cholera at the most for eight days.

These changes are all in the direction of improvement. More will inevitably follow; until the last remnant of the semi-barbarism of personal quarantine shall have gone out of existence. Intelligent measures, not only of local preventive sanitation, but of *maritime hygiene*, and also of the *inspection* and compulsory *purification of vessels* at quarantine stations, will remain, and will produce those effects vainly sought through rigid quarantine.

Let us see, finally, what conclusions the International Conference of last summer attained to, notwithstanding all the pressure of the advocates of the contagiousness of cholera. Under the head of "measures to be taken in European ports," the Conference *recommends a system of medical inspection*, in place of quarantine. If any States *prefer* the latter, it submits principles for its regulation. On these principles, the period named for detention of passengers and others for "observation," when they have arrived on a vessel having, or suspected of having, cholera on board, is seven days.

This *allowance* of quarantine, for a period so comparatively moderate, by the Conference, is certainly no more than was to be expected under its circumstances. But its distinct and decided *recommendation*, instead, of the system of *medical inspection*, is an immense step in sanitary progress. All the restriction provided for upon *this* system, in the terms prescribed by the Conference, is that the ship, passengers, and crew shall be thoroughly disinfected; after which "the property of the passengers and crew will be restored to them, and they will be admitted to *free pratique*." H. H.

ART. XXXVI.—*The Handbook for Midwives*. By HENRY FLY SMITH, B.A., M.B. Oxon., M.R.C.S. Eng., etc. 12mo. pp. 158. London: Longmans, Green & Co. Boston: Jas. Campbell, 1873.

THE proper instruction of midwives is a question which demands earnest consideration. In America, where labour commands a high reward, the poorer classes usually have the means to secure the services of competent medical attendants, nevertheless many women, the wives of labourers and mechanics, trust their lives in the hands of midwives, at least after their first or second labour, when the rapidly increasing family has to be supported by a sum that is no greater than "the day when the twain were made one flesh."

We have no means of estimating the preventable mortality among this class. It must be considerable. Another consideration of almost equal importance is the fact that parturition, though a purely physiological process, is attended not only with immediate but with prospective danger. The parturient woman may escape with her life, and happily imagining that all her trouble is over, get up from her lying-in bed to find that, through the ignorance of the midwife whom she trusted, she is the victim of some of the many disorders to which her sex is heir, and which, if they do not endanger life, make existence little less than a torment, or render her a mere consumer in a community in which she should be a productive agent.

In view of these facts we hail with pleasure any work or system of teaching which will improve our midwives, and make them more fit to discharge their

important duties. In the work which is before us Dr. Smith has furnished them with a useful handbook which very clearly defines their relations to both patient and physician, and which, if carefully studied, will enable the midwife to recognize most cases of difficulty in time to secure the services of a competent accoucheur, while, at the same time, she is furnished with sufficient information to enable her to manage most abnormal cases until intelligent assistance can be obtained.

The book is, of course, strictly elementary, and its language is adapted to the understanding of those who have not had a medical education. The principal point of the work is to teach the midwife when she should call for skilled assistance. Though all will concede that a work of this sort must be elementary, and that it should be as concise as possible, it is equally apparent that it should not be compressed at the expense of necessary details. In the description of the signs of pregnancy no allusion is made to auscultation of the abdomen except the mere mention of the placental bruit. Surely it is important for the midwife to be able to detect the beating of the foetal heart, the only certain sign of pregnancy. This sign appeals only to the senses. Its detection requires but a little training, while about the value of the sound there is no dispute.

The third stage is the most important period of a normal labour. At this time, when the patient and her friends feel perfectly happy, thinking that the peril is over, the real anxiety of the accoucheur is but begun. Before that, an examination proved the pelvis ample, and the steady advance of the head set his mind at ease; but when the child is extruded he knows that whenever the placenta is separated there is left a great surface from which the blood may flow in torrents. Until the after-birth is removed and the uterus firmly contracted he cannot feel safe. There is no part of the midwife's instruction more important than that in regard to the management of the third stage, while there is no part of the book more deficient in practical rules. The directions for removing the placenta (p. 75) would have done very well a quarter of a century since, but at the present time are out of date.

It is, unfortunately, too true that many intelligent practitioners deliver the after-birth by traction on the cord. Dr. Duncan, of Edinburgh, has shown (*Edinburgh Med. Journ.*, April, 1871) that this is but a clumsy procedure and by no means in accordance with nature's method of effecting the delivery of this structure. No mention is made of Credé's admirable mode of "placental expression," which seems to be destined to supersede other methods, and which has the great advantage of obviating the insertion of the hand into the uterus.

The author recommends that the perineum should be supported during the birth of the head, while, in speaking of its rupture (p. 89), he has but little to say about the causes, attributing it mainly to "attempts to push the perineum over the child's head, to dilate it with the fingers," or to the use of ergot in unsuitable cases. He should have directed attention to the cases in which the shoulders tear this part, a class which is by no means small when compared with those just mentioned, and about which it is highly important that the young practitioner and the midwife should be on their guard. The writer has seen a number of gentlemen greatly mortified at a rupture of the perineum which occurred during the delivery of the shoulders after they had congratulated themselves that the danger had passed with the birth of the head.

Artificial respiration in apparent death of the new-born infant is dismissed (p. 99) with the statement that "the accoucheur will know how to employ it." This is too little. It would, at least, have done no harm to have given the midwife plain and succinct rules how to employ one or more of the several methods. It is not difficult to conceive that, if properly instructed, she might save a

life which would be lost if time was wasted in sending some distance for the accoucheur, especially in the country where he is often several miles distant from his patient.

The remarks of the author on artificial feeding are in the main good, but he repeats the old error of diluting cow's milk when it has to be used, with two thirds its bulk of water. No absolute rule can be laid down for the management of these cases. Some children thrive on diluted milk, while others sicken, emaciate, and die when fed as recommended by the author. Dr. Corson, in an interesting paper on infant feeding (*Northwest Med. and Surg. Journ.*, 1870), strongly deprecates this dilution. He is in a measure correct. The truth probably lies in the middle ground. The reviewer is at least convinced that two-thirds of the bulk of water should rarely be added to cow's milk, and he has seen many children, who wasted rapidly and grew ill on this diet, improve rapidly when given pure cow's milk.

Attention has been directed to these points in this useful little book with no fault-finding spirit. Less objection is to be made to what our author says than to what he omits to say. When his work reaches another edition we think he could well afford to enlarge his book in order to make some of his directions more explicit.

In the mean time we hail his work with pleasure. Anything which will increase the knowledge of our midwives is to be gratefully received, and, so far as we know, this is the best manual for them published in the English tongue.

J. S. P.

ART. XXXVII.—*Clinical Lectures on Diseases of the Urinary Organs. Delivered at University College Hospital.* By Sir HENRY THOMPSON, Surgeon-Extraordinary to His Majesty the King of the Belgians, etc. Second American from the Third and Revised English Edition. With illustrations. Svo. pp. viii., 195. Philadelphia: Henry C. Lea, 1874.

THE fact that these lectures have reached a third edition in their own country, and a second on this side of the Atlantic, having been translated too into at least one foreign language, amply justifies the favourable opinion which we expressed of them in the number of this Journal for April, 1869 (p. 509). In their present form Sir Henry Thompson's clinical lectures are even more deserving of praise than as originally published, the present issue containing, beside two new lectures, numerous additions, and such alterations as have been dictated by the author's constantly enlarging experience. The subjects of the new lectures are "Further Observations on the Treatment of Stricture," and "The Early History of Calculous Disease, and the Treatment best adapted for its Prevention." In the former, the author recommends that when a stricture is found too resisting for dilatation with flexible instruments, conical steel sounds should be substituted, the smallest, however, not to be less than No. 6 or 7 (English scale) at the point; or that as a means of giving additional firmness to the flexible instrument, this should be armed with a short and soft lead stylet, terminating in a fine point and stopping short about four and a half inches from the end of the bougie. For cases which are unsusceptible of permanent relief by dilatation, he recommends internal urethrotomy from behind forwards, the instrument preferred being the simple one devised by Civiale. In his lecture on the preventive treatment of calculus, the author lays stress upon the fact that the origin of "superabundant uric acid deposit in the urine,

is due to defective assimilation on the part of organs associated with or forming the primæ viæ," and therefore recommends as preferable to the Vichy and other alkaline waters, such salines as the Friedrichshalle and Carlsbad waters, which "stimulate the excretory action by the primæ viæ without depressing vital power."

Our limits will not permit us to mention all the changes made in the present edition of Sir Henry Thompson's lectures, but we may say that he has introduced favourable notices of the "sondes condées" and "bougies à boule" of French surgeons; that he now confesses to have been obliged to resort to "perineal section" on three occasions; that he recommends the use of the "aspirator" in certain cases of urinary retention; that he deprecates the use of the fenestrated lithotrite, preferring under all circumstances the flat-bladed instrument; that he no longer introduces the tube after lithotomy, unless in cases of hemorrhage; that he reaffirms his doctrine as to the innocuousness—and inutility—of anodyne injections into the bladder; and that he recommends, in cases of vesical hemorrhage, injections of a solution of nitrate of silver (gr. j-iv to f ʒiv) or of the tincture of the perchloride of iron (f ʒj to f ʒiv).

We know of no book which presents, in such short compass, so much really valuable information upon urinary disorders as does this, nor one upon which the practitioner can more safely rely as a guide. We predict for Sir Henry Thompson's lectures even greater popularity in the future than in the past, and both to those who have, and to those who have not, become possessed of the first edition, we would give the advice, slightly modified from the original of the "Pervigilium Veneris":—

"Cras emat qui nuncquam emit,
Quique emit cras emat."

J. A., JR.

ART. XXXVIII.—*Infant Diet*. By A. JACOBI, M.D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, New York. Revised, enlarged, and adapted to popular use, by MARY PUTNAM JACOBI, M.D. 12mo. pp. 119. New York: G. P. Putnam's Sons, 1874.

THE simplicity of the title, and small size of this book afford but a very imperfect idea of the character of its contents, which must be carefully read to be fully understood. It is really a condensation of the results attained, and opinions based thereon, by the physiological researches of a number of investigators, chiefly German, into the nature and characters of the digestive processes which take place in children of the first year, and especially as regards human and cow's milk, and farinaceous substances; showing why altered human milk is injurious; why when normal it is as a general rule the best adapted for infantile nutrition; and why it is that all substitutes, unless prepared with a view to meet the special requirements of the system, must in their effects act injuriously on the health of the infant.

Dr. Jacobi remarks, that "few women seem to be aware of the insult implied in the assertion, that the theory is of no importance to them;" and acting upon this, he has prepared for them a thoroughly scientific book, fully up to the times in its physiological character, and quite interesting and instructive to those who by their previous education are enabled to fully understand it; but as we think, not to be readily comprehended by those for whom it appears to have been specially prepared. There has been to a large extent an omission of

technical terms and language; but there are words introduced here and there, and expressions made use of, which, however simple to a medical student, must be all Greek to one not versed in the language of medicine, and should have either been avoided or explained in a foot-note. We have noticed also in several places, that where terms were explained, it was not done at their introduction, but at a later portion of the volume, when the author appeared to be aware that they might not be understood.

In the first half of the volume we noticed but few words likely to require a medical dictionary at the hands of an intelligent woman; but in the remaining pages, and particularly where explaining the connection between summer heat and cholera infantum, we fear there is a great deal that would be somewhat puzzling to her understanding. However, there is a great deal of valuable information in the volume that is of a simple character, and what is not will be quite sufficiently so to many medical men, by whom it may be read with profit, and to whom we think it commends itself quite as much as to those for whose benefit it was directly or indirectly intended.

R. P. H.

ART. XXXIX.—*Medical Problems of the Day.* The Annual Discourse before the Massachusetts Medical Society, June 3, 1874. By NATHAN ALLEN, M.D., LL.D. 8vo. pp. 92.

It is curious to notice the seeming fatality which compels the medical anniversary orator to go back to the ancient Greeks, or even Egyptians, for a fair start. Surely, if any subject might plead exemption from this time-honoured usage, it should be one like the present. But as Dr. Allen makes the orthodox beginning, and comes down to the day and the topic *secundum artem*, through the dark ages, the revival of learning, Vesalius and Harvey—we can only conclude there must indeed be some occult and mysterious law presiding, and forever to preside, over productions of this sort.

Medicine, as a science, the speaker regards as having four grand divisions, or pillars—Anatomy, Physiology, Pathology, and Hygiene. Each of these, indeed, is a science in and by itself, founded on immutable laws of nature. The last named has been more recently and more imperfectly studied than the others. More and more, however, is hygiene becoming recognized as the science of greatest value, and the end for which the others are cultivated.

The questions which the speaker considers are connected with this branch of medical science. State legislation is first glanced at, and hints are given as to directions in which it may yet be called upon to act. The public mind, however, must first be educated up to the point of understanding the want; else legislation will not be demanded or tolerated, or intelligently enforced. Dr. Allen denies that the fullest possible acquaintance with means for the prevention of disease will ever destroy the public appreciation of medical services.

Dr. Allen has for years past paid much attention to the apparent physical degeneration of native New Englanders. He believes that there has been and is still in progress, a serious and alarming decline in the health, strength, and fertility of the race. He believes in the "change of type" most thoroughly, at least in the region where he has always lived. Disease formerly sthenic has become asthenic. The agencies answerable for this degeneracy, and the methods of combating them, offer most important problems. Among the heads under which the speaker arranged his remarks are, "Mental Culture," in which he

advert to bad methods of education; "The Temperance Question," and "The Laws of Inheritance." Under the latter he directs attention to the immense scope and power of hereditary influences. Upon the "Position of Woman," Dr. Allen dwells at some length, making just remarks, in sympathy with views recently published by Dr. E. H. Clarke, in his work on "Sex in Education."

The latter half of this address is devoted to an exposition of the author's views upon the "Laws of Human Increase"—considered especially in relation to the future of our native land.

It is a notorious fact that the number of children to each family is less, among natives, of native parentage, than was the case a few generations back. In quiet New England towns, free from foreign immigrants, the deaths equal and exceed the births. Deliberate interference with the course of nature can hardly account for more than a fraction of the diminished birth-rate. External influences and accidental circumstances affect particular cases; but the speaker believes the fecundity of a people to be proportioned to the harmony and completeness of its development. Dr. Allen seems to speak as if saying this was enunciating some new discovery, or hitherto unappreciated truth. While perfectly willing to acknowledge the general correctness of the statement made, we are unable to perceive any originality or novelty in it. A perfect balance and co-ordination of the physical, mental, and moral endowments might be expected to furnish the greatest promise of success, in the propagation of the race, as well as in other directions of human activity. A well-rounded and symmetrical development of man's whole nature is perfectly understood to be conducive to the health and happiness of the individual and of the race; and the special result inferred by Dr. Allen is only a part, or a manifestation, of a general condition.

While thus unable to attach much importance to the enunciation here made of a law governing the breeding of the human animal, we are glad to recognize the ability displayed by the writer in his exposition of the unsymmetrical character of American education and civilization, and of the influence of this on propagation. We well know that no amount of argument or eloquence will prevent marriages utterly unsuitable and improper. But the enlightenment which was powerless here, may yet be the cause of a more healthful and well-balanced culture in the next generation.

B. L. R.

ART. XL.—*Clinical Lectures on Various Important Diseases; being a Collection of Clinical Lectures delivered in the Medical Wards of Mercy Hospital, Chicago.* By NATHAN S. DAVIS, A.M., M.D., Professor of Principles and Practice of Medicine in Chicago Medical College. Edited by Frank H. Davis, M.D. Second edition. 12mo. pp. 288. Philadelphia: Henry C. Lea, 1874.

THE second edition of this little book differs from the first only in having twenty additional pages, which are devoted to the consideration of delirium tremens, two cases of disease of the brain, and pneumonia—very important subjects to be disposed of so summarily. We are glad to be able to chronicle a marked improvement in the manner of writing of prescriptions. In this respect the author has most carefully revised his book; but in all others it remains the same as before. We therefore see no reason for modifying the opinion we expressed in regard to it in the number of this Journal for October, 1873.

J. H. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Form of the Cavity of the Uterus.*—HAGEMANN has made a series of plaster of Paris casts of the interior of the uterus, and finds that the form of the uterus in a new-born child is distinctly bicornuate, a crista media being still visible as a remains of it in the virgin at puberty. Women who have had children and old people have some indication of it in a marked prominence of the walls at the point of entry of the Fallopian tubes. In childhood the uterus is very narrow from before backward. In multipara the transverse diameter, just above the orificium internum, is very considerable. On the other hand, in virgins the cervical canal is half the whole length of the uterus. The cervical canal is widest near its centre. The cristæ of the plicæ palmatæ are situated the one in front and to the left, the other behind and to the right. The retrogressive metamorphosis of the uterus after birth does not affect the whole uterus equally, but chiefly the placental region.—*Lancet*, Sept. 19, from *Archiv für Gynecol.*, Bd. v.

2. *Movement of Rotation of the Hand.*—The doctrine so long maintained, that in rotation of the hand the radius alone rotates round the ulna, has recently been contested by Dr. O. LECOMTE, who maintains that this conclusion has been drawn from dissecting-room experiments, in which all the muscles are stripped off the bones, and the humerus and ulna are held in a fixed position; but this is not the natural condition, and the fixation of the ulna in the movement is contraindicated by the plainest evidence of the senses. The movement, M. Lecomte observes, is not around a single invariable axis passing through the middle finger, but this axis may be displaced either inwards or outwards, and may thus pass through one of the other fingers or intermediate spaces, and both the bones of the forearm participate in the movement. The play of articulation is very complex in the act of rotation, the humero-cubital articulation in particular having an important rôle. The ulna executes a spiral movement of torsion on the trochlea of the humerus, which may vary in extent, but which is present in the different kinds of rotation. At the wrist the movement is quite peculiar, the surfaces of the radio-cubital articulation gliding in opposite directions over each other to an exactly equal and corresponding extent. The system of the rotator muscles of the hand comprises four muscles; two for the radius and two for the ulna. Each of these bones has a pronator and a supinator attached to it. There is a radial pronator (the pronator teres), a radial supinator (the supinator brevis), an ulnar pronator (the anconeus), and an ulnar supinator (the pronator quadratus).—*Lancet*, Sept. 19, 1874, from *Archives de Méd.*, Aug. 1874.

3. *The Rôle of the Gases in the Coagulation of the Blood.*—MM. E. MATHIEU and V. URBAIN, in a paper read before the French Academy of Sciences, Sept. 14, 1874, state as the results of a series of experiments they have made: 1. That carbonic acid gas is the agent which effects the spontaneous coagulation of the blood. 2. That during life the obstacle to this coagulation resides in the blood-corpuscles, these having for their special function the fixation not only of the oxygen, but also of the carbonic acid contained in the blood. They proceed to show that there are many proofs of the participation of carbonic acid in the phenomena of the spontaneous coagulation of the blood. In the act of coagulation a considerable amount of carbonic acid escapes from the blood, the quantity contained in it before coagulation being 48 or 49 per cent. of its volume, whilst after coagulation it only contains 40 or 42 per cent. Again, the blood returning from glandular organs, and especially from the kidneys, coagulates with difficulty or not at all, and such venous blood is found to be remarkably poor in carbonic acid, not containing more than from 16 to 20 per cent. of its volume. So, also, if carbonic acid be removed from the blood by the air-pump, coagulation will not take place, whilst if it be placed in an atmosphere of carbonic acid, coagulation rapidly sets in; the clots, however, are softer than those which form in air, rendering it probable that the presence of oxygen influences their consistence. Lastly, certain neutral salts impede or prevent coagulation, but such salts are known to fix a notable volume of carbonic acid, and thus virtually effect its withdrawal from the blood.—*Lancet*, Oct. 24, 1874.

4. *Researches regarding the Decline of the Graafian Vesicles.*—Dr. KNORID SLAVEANSKI, of St. Petersburg, remarks that modern investigations have thrown much light on the development of the Graafian vesicles, but the history of their life and death remains obscure. To elucidate this point Dr. S. has made numerous investigations in the histological laboratory of the College of France, an account of which he published in an interesting article in the *Archives de Physiologie* for March and May last.

The following are his conclusions:—

1st. That the Graafian vesicles are developed at the expense of the primordial follicles, and that they acquire a less or greater maturity during the whole course of life, from the first months of birth to about the age of forty years.

2d. That most of the nearly mature follicles do not rupture and extrude their contents, but that they undergo atresia by a process almost completely analogous to that of the formation of the yellow body.

3d. That the development and maturation of the Graafian vesicles do not take place periodically in a regular manner, and that there is no relation between them and menstruation.

4th. That menstruation is a physiological phenomenon entirely independent of the development and maturation of the vesicles.

5th. That the rupture of the more or less mature vesicles has always a certain relation to the congestion of the genital organs produced by any cause.

6th. That there exist many diseases (acute fevers, poisonings, etc.) which occasion atresia of the vesicles at various periods of their development, after an inflammation of the parenchyma of the ovary.

5. *The part which Gelatine plays in Nutrition.*—Prof. Voit some time ago showed that, although gelatine was not capable of directly entering into the composition of the body, yet it underwent decomposition in the blood, and thus spared albumen; and ETZINGER, under Voit's supervision, has recently (*Zeitschrift für Biologie*, Band x., Heft 1) endeavoured to show what part gelatine-yielding tissues play in the ordinary diet of man and carnivora. Gelatine, as is well known, is obtained by boiling, from the various connective tissues, including under this head bone, cartilage, fascia, tendon, and ligamentous tissue, which are more or less common articles of consumption. It is generally held, however, that they are indigestible; and we find Frierichs stating, in his *Handwörterbuch der Physiologie*, that tendons and fasciæ may frequently be found in the small and large intestines of animals fed on raw flesh, and that, in so far

as they are not acted on by the gastric juice, they exhibit a remarkable indisposition to undergo solution in the other fluids of the alimentary canal. Many researches have, however, shown that the gelatine-yielding tissues, even including the bones, are digestible. Boerhaave, Haller, Reaumur, Spallanzani, and many others, have supplied evidence on this point. Etzinger's own researches were made with artificial gastric juice, containing 0.3 per cent. of hydrochloric acid and the glycerine extract of the stomach of the pig, which contains pepsin. The first series of experiments was with gelatine itself, separate portions of which were acted on by hydrochloric acid alone, by pepsin without acid, and by pepsin with acid. The results were that gelatine underwent no change for a long period in water at the temperature of the body, or in a dilute solution of hydrochloric acid. On the other hand, gelatine was no longer capable of gelatinizing—*i. e.*, of assuming the solid form—after exposure for forty-eight hours to a mixture of pepsin and acid. Experiments with the ligamentum nuchæ, in which about 300 grains of the moist ligament were immersed in the 0.3 per cent. acid solution containing glycerine, showed that in the course of two days the ligament was broken up in fibres, and that in ten days it had undergone almost complete solution. Experiments with tendons showed that they were but slightly acted on by dilute hydrochloric acid alone, the amount dissolved in eight days under such circumstances being only 12 per cent.; whilst, when pepsin was added in the above proportion, 94 per cent. underwent solution in the course of only three days. Experiments with cartilage (the cartilage used being the fresh unboiled costal cartilage of the calf) showed in like manner that hydrochloric acid alone had little action upon it, whilst it quickly underwent solution in the artificial gastric juice. In the former case only 24 per cent. had been dissolved in eight days; in the latter, 75 per cent. in five days. Lastly, experiments with bones, in which the long bones of oxen were rasped down with a file, and the coarse powder placed either in dilute hydrochloric acid or in the artificial gastric juice, showed that, after ten days, with the former, 80 parts per cent. of the dry bone, as a whole, were dissolved; 69 per cent. of the organic, and 86 per cent. of the inorganic constituents of the bone. With the latter, 88 per cent. of the total dry bone was dissolved, with 76 per cent. of the organic, and 95 per cent. of the inorganic constituents; showing that with the artificial gastric juice more both of the organic and inorganic substances were dissolved than with diluted hydrochloric acid alone. These experiments, collectively, demonstrate that the gelatine-yielding tissues are largely soluble in the gastric juice. They do not, however, show whether gelatine is of much service in nutrition; and Etzinger applied himself to solve this problem, and especially to determine whether absorption of gelatine and the products of the digestion of gelatine, and of the gelatine-yielding tissue, took place in the alimentary canal and in the large intestines. For this purpose careful dieting of animals was instituted with coincident analyses of their urine and feces. The results showed that, in the cases of bone, cartilage, and tendon alike, these substances not only undergo digestion, but are absorbed into the blood and play an important part in nutrition. These substances, therefore, instead of being entirely cast aside as useless articles of diet, may advantageously be consumed in moderate quantities; and an interesting fact has been incidentally noticed both by Voit in previous researches, and by Etzinger in the present; of which, perhaps, some practical application might be made—namely, that the administration of bone filings caused speedy evacuation of the bowels; in fact, there is no substance not producing diarrhœa which so quickly traverses the intestinal canal as this. Professor Voit has observed the first motion containing bones within five hours and a half after their administration by the mouth.—*Lancet*, Oct. 24, 1874.

MATERIA MEDICA, GENERAL THERAPEUTICS,
AND PHARMACY.

6. *Mode of Action of some Emetics.*—M. CHOUPE has lately made some interesting observations in M. Vulpian's laboratory on the action of certain emetic substances—namely, tartar-emetic, apomorphine, and ipecacuanha, with its active principle, emetine. Two opinions have been expressed in regard to the mode of action of these substances when introduced into the general circulation, some conceiving that they only act at the moment of their elimination on the peripheral extremities of the nerves, whilst others believe that they act whenever they accumulate in sufficient quantity in the blood circulating in the medulla oblongata to start the co-ordinated movements which produce vomiting. M. Choupe's experiments lead him to think that both views are sometimes true, sometimes erroneous. He divided the pneumogastric nerves in dogs, and after permitting the efforts to vomit resulting from the operation to subside, he injected subcutaneously, or into the veins, an emetic dose of one or other of the above substances. He found that the previous section of the pneumogastriacs had no effect in the case either of the tartar-emetic or of the apomorphine, vomiting occurring just as freely as when the nerves were intact, whilst, on the contrary, with ipecacuanha or emetine no vomiting occurred in any instance. So, too, if, after emetine had been injected, and some time had been allowed to elapse, a little tartar-emetic were injected, vomiting at once took place. A point incidentally observed in these experiments is worthy of note—namely, emetine causes vomiting much more quickly when it is introduced into the stomach than when it is injected into the veins, whilst exactly the opposite occurs with apomorphine and tartar emetic. The conclusion to be drawn from M. Choupe's experiments seems to be that tartar emetic and apomorphine act both on the central nervous system and upon the gastric mucous membrane, whilst the action of emetine seems to be limited to the peripheric extremities of the vagus.—*Lancet*, October 10, 1874.

7. *Podophyllin.*—M. DEMARQUAY having of late made frequent use of this substance at the Maison Municipale de Santé, where a large proportion of the patients are women, M. Marchaut, his *élève*, published in the *Bulletin de Thérap.* for August 30 an account of the results that have been obtained of forty patients to whom it has been administered. Three only resisted its effects, and in these the constipation was rendered obstinate by mechanical obstacles. As a general rule its effects take place about twelve hours after its administration, the most extreme periods on either hand that were observed having been seven and nineteen hours. The medicine acted with little or no pain, either prior or subsequent to the stools; but it was often found that the patient had an inclination for stool without any result. This was especially the case in the subjects of obstinate constipation, and was obviated by increasing the dose, or, better still, by more frequent repetition of the remedy. The stools produced are remarkable for their non-diarrhœic character, being semi-liquid only, and often normal in colour and consistence; and podophyllin may be long employed without producing any secretory disturbance in the canal, and without inducing super-purgation to be followed again by constipation. The medicine may, however, act in this mischievous way if given in too large doses (five to ten centigrammes) and without bearing due relation to the age of the patient and the degree of constipation. In the stools there is also found a considerable portion of bile when the dose is properly apportioned. The various accidents said by some authors to attend the use of podophyllin (as vertigo, sweating, loss of appetite, vomiting, dysentery, etc.) have not been met with among M. Demarquay's patients, even when the medicine has been continued for a long period. This may be attributed to the small doses given, which have never exceeded six centigrammes. The formula which, after various trials, has been found most convenient, consists in a pill made of three centigrammes of podo-

phyllin, two of extract of hyoscyamus, and two of soap. This pill also constitutes the best average dose for an adult. It will sometimes, however, be insufficient in the subjects of habitual constipation, while for children one or two centigrammes suffice. When the three centigrammes do not prove sufficient, the dose may be gradually increased, or what is preferable, the pills may be given oftener, so that one is administered every twelve instead of every twenty-four hours. And when these do not suffice, it will be preferable, in place of increasing the quantity of each dose, to repeat the pill every eight or six hours. At the end of the third day, at latest, the effect will have been produced, it being also explained to the patient that the medicine is not intended to act as a purgative, but as a remedy against constipation, in order to secure the necessary patience. Stools once secured, the medicine must always be administered at the same time of the day, and the patient acquire the habit of going to stool. Ten or fifteen days may be required for this purpose, and then the doses must be gradually given at more prolonged periods; so that, perhaps, a month altogether may be required to overcome the constipation.—*Med. Times and Gaz.*, Sept. 19, 1874.

8. *Intravenous Injection of Chloral*.—Notwithstanding the strong disapprobation expressed at the French Academy of Medicine and Society of Surgery, of this means of inducing anæsthesia (see No. of this Journal for July last, p. 260), it has been employed (*Med. Times and Gaz.*, Oct. 17th) by Professors DENEFFE and VAN WETTER, of the Ghent University, in eleven cases, and always with success. The duration of the procedure has varied from six to thirteen minutes, in two of the cases only having exceeded ten minutes. The quantity of chloral injected has varied from one and a half grammes to twelve grammes (water three parts, chloral one part), the state of absolute anæsthesia having lasted from twelve to thirty-two minutes. In one case it lasted three hours, but in that twelve grammes had been injected. In another case, when nine grammes were injected, it lasted an hour. After the completion of the operations the patients slept for hours, or even for a whole day, with only interruptions from time to time, lasting for some minutes. In none of these cases did any ill effect arise, while the patients were free from vomiting, even although they might have recently eaten; and insensibility is produced without the occurrence of the stage of excitement which always precedes this in the ordinary mode of employing anæsthetics. These advantages, conjoined to the rapidity and certainty of the action of the chloral when injected into the veins in doses which can be exactly determined, lead MM. Oré, Deneffe, and Van Wetter to regard this method as very superior to the induction of anæsthesia by inhalation.

Full particulars are given of Profs. Deneffe and Van Wetter's last case in the *Presse Médicale Belge* for October 4. In this the anæsthesia was induced for the removal of cancerous disease of the rectum, the patient being in a very dilapidated condition. Profound anæsthesia continued during two hours (seven grammes and a half of chloral having been employed); and two days elapsed before the patient had entirely passed out of the state of subsequent somnolence. No accident whatever occurred.

9. *Local Application of Tannin*.—Mr. P. MIALL, Surgeon to the Bradford Infirmary, states (*British Med. Journ.*, Nov. 7, 1874) that he has used tannin for some years as a topical application in various diseases, rather as an astringent than a styptic. To prepare it of full strength, an ounce of perfectly fresh tannin must be mixed with six drachms of water, in which it readily dissolves. The solution is a thick fluid, of the colour and consistence of treacle, which keeps much better than tannin itself. I am in the habit of prescribing it as Martin's solution, having learnt it from a paper by Mr. Martin in the *British Medical Journal* of March 20th, 1869. Mr. Martin recommended it as a method of converting living skin into leather.

Most of the tannic acid found in shops contains a large proportion of gallic acid, and will not yield a very strong solution. But, if an ounce of old tannic acid be mixed with two ounces of water, a tolerably strong solution, which answers for many purposes, may be decanted off after subsidence.

The strong solution of tannin is a most powerful astringent, almost free from irritating properties. It is one of the best dressings for wounds—far superior to collodion, and even less irritating than the styptic colloid, which it somewhat resembles. If applied by a brush and allowed to dry, it soon forms a pellicle which excludes the air, and gives ease to pain. It may be applied to almost any form of ulcer, and to wounds after amputations or other operations, especially when not very deep. It answers well, for instance, after the operation for hare-lip, painted over the pins and threads, in the same way as collodion is sometimes used.

In a female, aged 26, the hair was caught between rollers and the whole scalp removed to within an inch of the left eyebrow and two inches from the right, round on a level with the tips of the ears to about the external occipital protuberance, the periosteum being extensively removed at the vertex. There was much suppuration, followed by erysipelas. After three months, exfoliation of bone occurred, and skin-grafting was performed, first with eleven grafts, and, six weeks subsequently, with twenty-one. After varied treatment, antiseptic and other, little progress was made, till, nine months after the accident, strong tannin-solution was applied. Discharge and fetor diminished at once, and the healing process went on more quickly than before. Tenderness diminished, and the general health improved rapidly for the first time since the accident. The wound, eighteen months after the accident, was about half its original size, and the discharge trifling. The patient does household work, wears only a thin cap, and is little worse for the accident, generally or locally.

Strong tannin-solution applied to the ulcerated skin of ingrowing toe-nail at once removes pain. After one application, the offending corner of the nail may be readily raised, a little lint inserted underneath, and the nail allowed to grow up. Among many cases, I have in this way cured one in which evulsion, twice performed, had proved only a temporary remedy, the disease being reproduced each time the nail grew up. For cracked nipples, Martin's solution diluted with an equal quantity of water, is the best application, and corresponds to the tannin-solution commonly used for this purpose.

Enlarged tonsils may be reduced by daily brushing with Martin's solution. This treatment, though vastly inferior to extirpation, or even to the application of potassa cum calce, is painless, and therefore, in some cases, useful.

Bleeding warts may be readily removed by this application, as also by the perchloride of iron. I have found the former to readily reduce the granulations from an unhealed umbilicus in an infant.

Chronic phlegmonous erysipelas in the legs may be painted with it with great advantage. I have not found it so useful in acute erysipelas or erythema. As Mr. Thomas says, concentrated tannin drops are a useful remedy after the removal of polypi from the ear. I have known them to remove a small polypus without operation. They check discharge and remove fetor in chronic catarrh of the middle ear.

10. *Tannic Acid as a Styptic*.—Mr. T. LLEWELLYN says (*British Med. Journal*, Oct. 24, 1874), in tannic acid we have a perfectly safe, non-irritating, easily portable remedy, and, moreover, one infinitely more cleanly than iron. Its action may be beautifully seen after abscission of the uvula or excision of the tonsils; when, if there be the least tendency to hemorrhage, a few slowly swallowed sips of a saturated aqueous solution of tannin will immediately arrest all bleeding and the cut surfaces will be seen glazed over with a thin pinkish coating, which is, in fact, a tannate of albumen. An atomized inhalation of tannin acts almost magically in many cases of hæmoptysis; and there is every reason to believe that an injection, either in stream or spray, of a similar character, would act as beneficially in *post partum* hemorrhage as it does in the instances quoted. If iron or nitrate of silver be applied to a stump or bleeding surface which it is necessary to watch, or where one may have to apply a ligature, their use is very confusing, as a black spongy mass is formed, almost impossible to remove. In such cases, and in all operations on the mouth and nose, or where ligatures are inconvenient or inapplicable, the use of tannin will be found most serviceable. Both my colleague Mr. Lennox Browne and I have used it with

advantage after the removal of polypi from the ear, with the further result, so far as our experience goes, of diminishing the chances of recurrence of these very troublesome formations.

11. *Glycerine-Sichel; a new Topical Application.*—This preparation, which consists of pure glycerine and the yolk of egg, and has the appearance and consistence of honey, is highly praised as a local application for several purposes. In fissures of the nipples of nursing women it affords relief when other remedies fail. In eleven such cases, in which it was applied, it afforded relief in every one.

It has also been used in four cases of rupture of the perineum, and with equally favourable results.

In the clinic of Dr. Vernier it is daily used to anoint the hands when making an examination of suspicious women, and found to be a perfect protection from infection.

This preparation does not putrefy, does not become rancid like ointments; it assists in cleansing wounds, and promotes primary union.

In fissures of the mammæ it protects the skin from the action of the saliva of the child, and from sour milk; it protects lesions of continuity from the air, and relieves pain. In ruptures of the perineum it protects the torn surfaces from being irritated by the urine and lochiæ.—*La Tribune Médicale*, 27th Sept. 1874, from *Gaz. Obstetricale et Gaz. de Joulin*, Sept. 1874.

12. *Milky Juice of Jatropa Curcas a powerful Hæmostatic.*—BAROO UDHOO CHAND DUTT extols (*Indian Med. Gaz.*, Oct. 1874) the milky juice of the *Jatropa Curcas* as an hæmostatic, and relates two cases of surgical hæmorrhage in which he employed lint moistened with it with prompt arrest of the bleeding. The application does not cause pain or act as a caustic. "It simply curdles up the blood and covers the bleeding surface with a tenacious layer." It has no injurious effect on open wounds.

13. *Use of the Alcoholic Extract of Nux Vomica in Large Doses in Various Forms of Nervous Diseases, both Acute and Chronic.*—Dr. DE STEFANI combats the opinion of those physicians who regard *nux vomica* as an irritant of the spinal cord and explain its beneficial action in paralysis on this assumption, his own experience having demonstrated to him that the drug exerts a depressing action on the ganglionic system. As this system has numerous relations and sympathies with the cerebro-spinal, the *nux vomica*, according to Dr. de Stefani, acting upon both, relaxes the vital tension of the nerves, restores to them their natural conducting power, and also the degree of influence necessary to maintain the harmony of the vital functions of the organs, and consequently all the alterations in the vital fluids dependent on nervous affections are mitigated and removed even without the aid of any other medicines. From this belief in the depressing effects of *nux vomica* Dr. de Stefani employs it, and especially its alcoholic extracts, in all acute and severe hyperæsthenic maladies, as well as in chronic ones, whenever any nervous symptoms are manifested in connection with the ganglionic or cerebro-spinal system. In acute diseases, in proportion to the largeness of the dose, the curative action is more rapid, so that in twenty-four hours the patient may be rescued from danger in most instances. The action of *nux vomica* on the ganglionic system, is marked only by alleviation of the morbid symptoms, or at most by a slight tremulousness of the heart and internal viscera, but on the cerebro-spinal system it is manifested by a feeling of confusion (*sbalordimento*) in the head, and of something as it were penetrating into all the fibres of the marrow of the bones, and sometimes by a vivacity of the senses, or a tremulousness of the whole body or some slight spasm of the facial muscles. The tolerance of the drug is not always equal. In acute and serious diseases of the two nervous systems the tolerance is great, in the chronic affections of the ganglionic system it is greater than in that of the cerebro-spinal, and in the organic diseases it is in relation to the gravity of the nervous sympathies. Dr. de Stefani recognizes the intolerance of the drug by a test which he considers infallible. By

the rapidity of its action and the great sympathy between the two nervous systems, and by the extensive range of the spinal symptoms, the intolerance is so indicated in these last by the stiffness of the lower jaw and of the tongue, with some degree of subsultus in the lower limbs or in all the body, and when these indications are present a warning is conveyed as to the effects of the medicine.

Dr. de Stefani maintains, in reference to the curative action of *nux vomica*, that the drug depresses the muscular force, if this has been stimulated by hypersthenia, and stimulates it when it has been apparently depressed by the same cause; that it lowers the pulse when it is hard and vibrating, and raises it when it is small and weak; that it lowers excessive heat of the skin and warms the skin when it is morbidly cold; that it regulates both the pulse and the heat of skin when they are variable several times in the day; that it relieves ardent thirst; that in costiveness which has resisted repeated purgatives it opens the bowels, and in some cases arrests diarrhœa; that it also arrests spontaneous hemorrhage and relieves hæmorrhoids; that it relaxes spasms, removes neuralgic, pleuritic, and rheumatic pains, calms delirium, and removes morbid wakefulness, or awakes patients from morbid sleep, promotes perspiration when deficient or arrests it when profuse, etc., whenever these symptoms are the results of a nervous affection. Dr. de Stefani, however, gives a judicious warning not to employ the *nux vomica* at first, even in cases where its use is indicated, unless the occasion be very urgent, because many nervous diseases may be cured by ordinary remedies. But when other means have failed, and the use of *nux vomica* is decided upon, then it is necessary to guard against giving too small doses, because the inefficacy of the dose might induce a doubt as to the action of the remedy, or, on the other hand, the supervention of new symptoms might be erroneously attributed to the drug instead of to the disease itself. When therefore the first prescription does not produce the desired effect, the dose should be increased as long as tolerance exists, and should be repeated for two, three, or more days, and, even when the symptoms have been relieved, the medicine should be continued, in order to prevent a relapse.

The dose of the alcoholic extract of *nux vomica* recommended by Dr. de Stefani in subjects of middle age suffering from chronic disease is from five to ten centigrammes (about $\frac{1}{20}$ to $\frac{1}{10}$ of 15.432 grains), and in serious cases this dose may be raised to 14 to 30 centigrammes, combining it with an equal quantity of extract of *rhns radicans* and some extract of henbane. In very severe diseases Dr. de Stefani thinks that this dose might be doubled or trebled, as, for instance, in tetanus and hydrophobia, but he has not yet employed it in such cases.

Dr. de Stefani gives the history of twelve cases treated by him in the manner indicated, and he regarded them as fully proving the efficacy of the drug.—*Brit. and For. Med.-Chir. Review*, from *Lo Sperimentale*, Firenze, May and June, 1874.

14. *On Gelatine Disks containing Alkaloids for Hypodermic Administration*.—Dr A. ERNEST SANSON, Assistant Physician to the London Hospital, in the *Medical Times and Gazette* for Oct. 31, 1874, makes the following practical and apparently excellent suggestion.

He says: "There can be no doubt of the value of the hypodermic injection of solutions containing salts of the sedative alkaloids in many conditions of pain, and very probably such a method of administration of remedies only waits a further development. Certain of the difficulties connected with the operation are now reduced to a minimum; syringes are well constructed, and, by improvements in the needle-pointed tubes, punctures are rendered almost painless. It has always seemed to me, however, that some objections stand in the way of the more extended employment of hypodermic medication. The first is that the solutions do not keep well, and in keeping vary in their strength. A practitioner requiring his solution in an emergency, finds it, after having left it for some time unused, mildewed and useless. A second objection is that the solutions are necessarily cumbrous to carry about. Chiefly, however, the objection is this: the cases calling for hypodermic treatment are sudden, the solution is not at hand, and by the time it is procured the great opportunity is lost.

"The idea of a plan of overcoming these difficulties was suggested to me by the use of the gelatine disks containing atropia employed for obtaining dilatation of the pupil. At my request Messrs. Savory and Moore prepared some gelatine disks containing (a) morphia acetate one-sixth of a grain, (b) atropia sulphate 1-120th of a grain in each. These are immediately soluble—one in two, two in three, drops of warm water—and I have found the injection of the solution thus made to be attended with the best results. The disks have also been employed in the wards of the London Hospital, and Mr. Shapley, one of the resident medical officers, informs me that they have succeeded perfectly well.

"The method I adopt of dissolving is to place the disk or disks in a teaspoon with two or three drops of water, and then warm over a spirit-lamp or candle. Solution takes place in a few seconds, and the fluid is at once taken up into the syringe and injected. It is obvious that by adopting these means, providing that the disks be carefully prepared, there is absolute certainty as to dosage. There is no doubt that the disks in a dry state will keep good for an unlimited period. No difficulty can be experienced as to having the hypodermic medicaments at hand, for the whole series—containing salts of morphia, atropia, caffeine, apomorphia, strychnia, ergotina, etc.—can be carried in an envelope which occupies scarcely any appreciable space in the smallest sized pocket-book."

15. *Practical Indications to be drawn from the State of the Pupil during Surgical Anæsthesia.*—M. P. BUDIN, in an article in *Le Progrès Médical* (Sept 5, 1874), says that he has endeavoured to discover some sign which might serve as a guide in the administration of chloroform, and which would indicate the state of sensibility during its administration. Observation and experience have led him to the following conclusions:—

1st. There exists in surgical anæsthesia produced by chloroform a constant relation between the state of the pupil and the period of anæsthesia.

2d. During the period of excitement the pupil is *dilated*.

3d. This period having passed, the pupil contracts; this atresia is well marked, and continues for several minutes, accompanied with complete general anæsthesia.

4th. The *dilatation* of the pupil coming on during an operation indicates in general, either that the anæsthesia is less profound, or that the return of sensibility is approaching.

5th. The state of the pupil, then, may serve as a guide in the administration of chloroform.

6th. During operations which last a long time, if it be wished that the patient should be insensible and motionless, the anæsthesia should be so managed that the pupils continue constantly contracted.

7th. Finally, *vomiting* may produce dilatation of the pupils, cause the insensibility to disappear, and the patient to awake; it annuls, in part, the effects of the anæsthesia.

16. *Physiological Action of Hydrocyanic Acid, and the assumed Antagonism of Hydrocyanic Acid and Atropia.*—DRS. BOEHM and A. KNE have made some experiments on these subjects, in the physiological laboratory at Dorpat.

The following is a *résumé* of their conclusions:—

1. The operation of prussic acid is directed upon the central nervous system, whose functions are annihilated by large doses, after a brief excitement or increase.

2. The lesions of respiration and circulation arise from analogous changes in the activity of their centres in the medulla oblongata.

3. The vagus plays no part, either in the effect of prussic acid on the respiration, or in its effect upon the heart.

4. Atropia is not an antidote to prussic acid. The only rational treatment of this poisoning is the persevering performance of artificial respiration.

How the results of our researches agree with the physiologico-chemical ope-

ration is a question for whose decision further researches must be made, but the solution of which is, we believe, simplified by our physiological discoveries.

(Here follow complete "*Versuchsprotokolle*," or detailed and tabulated descriptions of all the authors' experiments.)

Dr. Anstie observes (*Practitioner*, Sept. 1874) that these researches seem to be of very high practical interest and importance. "As confirming, at least partially, Preyer's assertion as to the possibility of reviving animals poisoned with prussic acid, by means of artificial respiration perseveringly carried out, it deserves very careful attention. And, on the other hand, if the antagonism of atropia does not exist, the sooner this is known the better. Considering the justly high reputation as an experimenter which Preyer holds, we are not prepared to accept as final the decision now pronounced by Boehm against the antidotal power of atropia.

"Certainly, however, we are not particularly inclined to believe that hydrocyanic acid acts solely or mainly as an exciter of the vagus. If that were so, it would not have been possible for us to note, as we have repeatedly noted, in accordance with Boehm's observation, that animals dying, even quite suddenly, from a large dose of the acid, while lying perfectly motionless and flaccid, and to all appearance dead, may still exhibit very distinct cardiac pulsation for as much as twenty or twenty-five minutes. And, indeed, the general toxic picture presented by an animal rapidly poisoned with prussic acid is far enough from conveying the idea of an intoxication so singularly limited as Preyer would have us believe. The protruded, tense, and glistening eyeballs, the dilated pupils, and the foam at the mouth, seem to speak unequivocally to a powerful action on the encephalic centres.

"In short, we must say that while Preyer's recommendation of artificial respiration in prussic acid poisoning is now strongly corroborated, the antagonistic action of atropia has been for the moment seriously discredited, if not altogether overthrown."—*Practitioner*, Sept. 1874.

17. *Atropia as an Antidote to Poisonous Mushrooms*.—Dr. T. LAUDER BRUNTON states (*British Med. Journal*, Nov. 14, 1874), that one of the most perfect instances of antagonism is the power of atropia to counteract the poisonous principle of mushrooms. This principle seems to be the same or nearly the same in different species of mushrooms, but the effects produced may vary in different individuals. They all act more or less on the intestinal canal and heart, and apparently also on the brain. The usual symptoms are uneasiness in the stomach, vomiting, purging, a feeling of constriction in the neck, want of breath, giddiness, fainting, prostration, and stupor. Sometimes the intestinal symptoms are most prominent; at other times, the cerebral ones. The most extraordinary action of poisonous mushrooms is upon the heart. The active principle of the *Agaricus muscarius*, or *Amanita muscaria*, was separated by my friend Professor Schmiedeberg of Strasburg, and named by him muscarin. The merest trace of this alkaloid will arrest the pulsations of the frog's heart almost instantaneously, and prevent it from ever beating again unless its effect be counteracted. But if a minute quantity of atropia be brought into contact with the organ, it will begin to pulsate again, and will go on beating for a long time. I have stopped the motions of a frog's heart by dropping a little dilute muscarin upon it, and have again made it pulsate after it had remained perfectly motionless for no less than four hours. Muscarin does not stop the heart of mammals so readily as that of the frog, but it renders the pulse slower, and intermissions are sometimes noticed in cases of poisoning by mushrooms. A little atropia at once counteracts the effect of muscarin on the heart in mammals just as it does in the frog.

But, besides this remarkable effect of muscarin on the heart discovered by Professor Schmiedeberg, it possesses one no less extraordinary upon the pulmonary vessels. This I discovered some time ago, when experimenting with a specimen of muscarin given to me by my friend. He had noticed that intense dyspnœa was one of the most marked symptoms produced by the poison. He had not, however, attempted to explain it. He had observed that during the dyspnœa the arteries contained very little blood, and when cut across hardly

bled at all. On considering the matter, it appeared to me that this emptiness of the arteries and the dyspnœa might be due to a common cause, viz., contraction of the pulmonary vessels. If these vessels contract spasmodically, the blood will be prevented from passing through them, and will accumulate in the right side of the heart. The right heart and veins will consequently become gorged with blood, while none will reach the left side, so that both it and the arteries will remain empty or nearly so. As the blood cannot reach the lungs to become aerated, dyspnœa occurs; for this may be produced as well by preventing the blood from reaching the air by compressing the windpipe, and thus preventing the air from reaching the blood. This supposition of mine appeared to explain the symptoms perfectly; but it was only a supposition, and required to be tested by experiment before it could be regarded as having any value.

Dr. B. tested, and the results confirmed his theory, and satisfied him that the dyspnœa results from spasmodic contraction of the pulmonary vessels. The dyspnœa, as well as the other symptoms of muscarin poisoning, disappear in animals almost immediately after the injection of atropia, and, indeed, Schmiedeberg and Koppe describe an experiment in which the use of this antidote during the death struggle completely restored a dog which had been poisoned by muscarin. They, therefore, recommend that in cases of poisoning by mushrooms the stomach should be emptied, and then atropia injected subcutaneously. It is a curious circumstance that, in poisoning by mushrooms, tickling the fauces seems to prove much more efficacious in producing vomiting than the administration of tartar emetic. The antidote may be given by the mouth, either in the form of tincture of belladonna or liquor atropiæ; but Schmiedeberg and Koppe prefer subcutaneous injection, on account of the more rapid absorption and speedy action of the drug, as well as the more accurate adjustment of the dose. The dose for subcutaneous injection should be about one-hundredth of a grain or about one minim of the liquor atropiæ sulphatis (*B. P.*) repeated if necessary until the dyspnœa is relieved.

18. *Antagonism of Medicines.*—Dr. JOHN HUGHES BENNETT, Chairman of the Committee of the British Medical Association appointed to investigate this subject, submitted a report at the last meeting of the association, of which the following is a brief summary: The reporter stated that "at the preliminary meetings of the committee, it was determined to introduce the substance under examination in solution below the skin of animals, and ascertain, by careful observation—

- "1. The physiological actions produced.
- "2. The minimum fatal dose.
- "3. The influence of one supposed antagonistic substance, on the physiological action of the other when both were simultaneously injected.
- "4. The influence of the supposed antagonistic substance when introduced some time *before* the fatal one.
- "5. The influence of the supposed antagonistic substance when introduced some time *after* the fatal one.
- "6. The limits of the antagonism when such existed.
- "7. The performance in all cases of a crucial test consisting, when any supposed antagonistic action had saved the animal, in injecting the same dose of the active substance into the same animal a week or ten days afterwards. If death then took place, it was held that the two substances were antagonistic.

"By such a method, we hoped to ascertain, beyond the possibility of doubt, whether one drug could really antagonize the fatal or injurious properties of another, choosing in the first instance, for experiment, such as exhibited the most powerful and unequivocal action. In this manner there have been investigated, during the four years over which the committee's labours have extended, the antagonistic properties existing between—

- "1. Hydrate of chloral and strychnia.
- "2. Sulphate of atropia and Calabar bean.
- "3. Hydrate of chloral and Calabar bean.
- "4. Hydrochlorate and meconate of morphia and Calabar bean.

- " 5. Sulphate of atropia and meconate of morphia.
- " 6. Meconate of morphia and theine.
- " 7. Meconate of morphia and caffeine.
- " 8. Meconate of morphia and guaranine.
- " 9. Meconate of morphia and infusion of tea.
- " 10. Meconate of morphia and infusion of coffee.
- " 11. Extract of Calabar bean and strychnia.
- " 12. Hydrate of bromal and atropia."

I. With regard to the *antagonism between chloral hydrate and strychnia*, the experiments of the committee appear to establish the following general conclusions:—

1. That, after a fatal dose of strychnia, life may be saved by bringing the animal under the influence of chloral hydrate.

2. That chloral hydrate is more likely to save life after a fatal dose of strychnia than strychnia is to save life after a fatal dose of chloral hydrate.

3. That, after a dose of strychnia, producing severe tetanic convulsions, these convulsions may be much reduced, both in force and frequency, by the use of chloral hydrate, and consequently much suffering saved.

4. That the extent of physiological antagonism between the two substances is so far limited, that (1) a very large fatal dose of strychnia may kill before the chloral hydrate has had time to act; or (2) so large must the dose of chloral hydrate be to antagonize an excessive dose of strychnia, that there is danger of death from the effects of the chloral hydrate.

5. Chloral hydrate mitigates the effects of a fatal dose of strychnia by depressing the excess of reflex activity excited by that substance, while strychnia may mitigate the effects of a fatal dose of chloral hydrate by rousing the activity of the spinal cord; but it does not appear capable of removing the coma produced by the action of chloral hydrate on the brain.—*Brit. Med. Journ.*, Oct. 3, 1874.

II. With regard to the *antagonism between sulphate of atropia and extract of Calabar bean*, the general conclusions are, that—

1. Sulphate of atropia antagonizes to a certain extent the fatal action of Calabar bean.

2. The area of antagonism is even more limited than Dr. Fraser has indicated.

In all the experiments made in connection with this branch of the inquiry, it was found that so-called antagonism existed within very narrow limits. The danger was, not death by too great a dose of sulphate of atropia, the supposed antagonist, but death from the effects of the extract of Calabar bean. In this respect, there was also a marked contrast to the action of hydrate of chloral on the physiological effects of strychnia. In the latter instance, the danger evidently would be, in a case of poisoning by strychnia, to give too large a dose of hydrate of chloral; whereas, in the case of poisoning by extract of Calabar bean, it would apparently be very difficult to arrest its effects by sulphate of atropia, because a small dose of the latter produces little effect (at all events in rabbits), and the effects of the extract of Calabar bean are so violent as soon to destroy life. It results that, for all practical purposes, atropia, as an antidote to Calabar bean, is useless, and not to be compared with the effects of chloral hydrate, as shown by the committee under the next head.—*Ibid.*, Oct. 10.

III. Antagonism between *hydrate of chloral and Calabar bean*.—From the experiments made, it is evident that, in the action of chloral hydrate and extract of Calabar bean, we have a good example of physiological antagonism. This antagonism is, however, limited, as in all such cases, by two conditions: 1. *By the doses administered.* More than a minimum fatal dose of extract of Calabar bean destroys life, notwithstanding the administration of chloral hydrate. 2. *By the interval of time between the administration of the two substances.* There is a great probability of saving life in those instances in which both substances are given almost simultaneously. This probability is diminished if the chloral hydrate be given five or eight minutes after the extract of Calabar bean: while there is no chance at all if the chloral hydrate be given more than eight minutes after a fatal dose of extract of Calabar bean.

But even in those cases in which death occurs after the introduction of both substances, the effects of the Calabar bean are much less marked.

These results must be regarded as very important. Several cases are now on record where ships coming from Africa have discharged Calabar beans on the shore, and which have been eaten by children with more or less poisonous effects. In such cases, the administration of chloral hydrate should at once be resorted to. In Africa, fatal doses are designedly given by the ignorant natives as a test of guilt or innocence; and it will be well to remember that there it may not unfrequently occur that, as civilization opens up the country to our missionaries and medical men, life may, in this way, not unfrequently be saved.—*Ibid.*, Oct. 17.

IV. Antagonism between *hydrochlorate and meconate of morphia and Calabar bean*.—The conclusion to be drawn from these experiments is undoubtedly that meconate and hydrochlorate of morphia are in no way antagonistic to extract of Calabar bean.—*Ibid.*, Oct. 24.

V. *Antagonism between sulphate of atropia and meconate of morphia*.—The inferences drawn from the experiments on rabbits are:—

1. Sulphate of atropia is physiologically antagonistic to meconate of morphia within a limited area.

2. Meconate of morphia does not act beneficially after a large dose of sulphate of atropia, for in these cases the tendency to death is greater than if a large dose of either substance had been given alone.

3. Meconate of morphia is not specifically antagonistic to the action of sulphate of atropia on the vaso-inhibitory nerves of the heart; and

4. The beneficial action of sulphate of atropia after the administration of large doses of meconate of morphia is probably due to the action sulphate of atropia exercises on the bloodvessels. It causes contraction of these, and thus reduces the risk of death from cerebral or spinal congestion, as is known to occur after the introduction of fatal doses of meconate of morphia. It may also assist up to a certain point, not precisely fixed in these experiments, by stimulating the action of the heart through the sympathetic, and obviating the tendency to death from deficient respiration observed after large doses of morphia.—*Ibid.*, Oct. 31.

From experiments on dogs it appears that in them sulphate of atropia modifies the symptoms of poisoning by meconate of morphia, diminishes their intensity, and may even save life after a fatal dose of the latter. It is therefore decidedly antagonistic, but within a limited area. In man, sulphate of atropia would be too dangerous and uncertain a remedy to depend on in cases of poisoning by opium or any of its salts, but where the heart's action is greatly diminished it is directly indicated.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

19. *Pathology of the Blood*.—M. LAPTSCHINSKY, of St. Petersburg, contributes a paper to the *Centralblatt* on the microscopic changes undergone by the blood in various diseases. He finds that in various diseases in which marked febrile symptoms are present, the microscopic aspect of the blood is essentially different from that of health. The changes consist in the blood-corpuscles not running into regularly formed rouleaux, but accumulating in heaps or clumps of various size and shape. The individual blood-corpuscles frequently appear swollen and cloudy, and their contours less distinct than natural. Small corpuscles, one-third of the normal size, are often met with, some of which exhibit a more intense colour than natural, whilst others are completely pale. In the interspaces of the clumps of red corpuscles, great numbers of white corpuscles may be seen, often coalescing to form groups of from 3 to 8. In typhus he counted from 60 to 80, and more, in one field of

vision; in cholera from 110 to 130. Careful enumeration of the relative numbers of white and red corpuscles, four days after death in the above cases, showed that there was 1 white to 60 red corpuscles in the case of typhus, and 1 white to 23 coloured in the case of cholera. In a very anæmic woman, suffering from suppuration in the knee-joint, the proportion of the white rose to 1 to 13 red. The white corpuscles in these cases presented unusually active and extensive amœboid movements. The nuclei of the colourless corpuscles took a part in the amœboid movements, and could be seen altering their position and form in the interior of the white corpuscles. The thorn-apple or horse-chestnut-like form of the red corpuscles he did not find to be unusually frequent. He found, however, large quantities of granular or detritus-like material in the blood of febrile, but not much in the blood of cachectic and anæmic patients. From his enumerations he feels satisfied that in febrile diseases, and in Bright's disease, the conversion or development of white corpuscles into red is either materially retarded or is entirely arrested.—*Lancet*, Oct. 31, 1874.

20. *Certain Types of Disease included under the Term of Purpura Hæmorrhagica*.—Dr. RICHARDSON read before the Medical Society of London, Nov. 9th, a practical paper on this subject. He commenced by indicating that in the progress of medical science and art it had often happened that one or more distinct diseases had been described under a single generic appellation; this particularly applied to the term purpura hæmorrhagica. He defined three forms of purpuric disease, each having a distinct pathology, etiology, diagnosis, prognosis, and treatment. These he called (a) aqueous purpura, (b) saline purpura, (c) vascular purpura. Aqueous purpura was so named because in it the water of the blood is in excess, and the colloidal and crystalloidal parts are relatively decreased; there is no evidence that the actual quantity of fibrine is reduced, but it is distributed through too large a volume of water. This type of purpura has been studied by the synthetical method. The origin of it was traced to hereditary causes mainly, but it may arise from mental shock. Two illustrative cases were given. In saline purpura the blood is surcharged with some saline soluble substance by which the plastic colloidal fibrine is held in undue solution. The synthesis of this type was also explained. The disease is not hereditary, but is induced by some error of diet or other cause that increases the solubility of the fibrine. The author added he had seen it induced by the excessive use of chloral. Passive exudations from vascular parts are characteristic of this type. In vascular purpura the blood is not modified at all, but owing to some defect in the vessels of the minute circulation, they allow the blood to escape if subjected to any blow, strain, or pressure; this may be due to paralysis of the vessel, but the author is rather inclined to attribute it to some structural modification of the vessels themselves. The diagnosis of these three forms was minutely described, the different characters of the eruptions being defined with special care. The author also remarked that these three types may be combined, and concluded his paper by a review of the different modes of treatment required. A special point was made of the best method of arresting the hemorrhage, and Dr. Richardson dwelt on the importance of paying attention to general as well as to local measures. For the former he recommended the giving of suitable food and of the mineral acids; for the latter, firm pressure and a styptic, though he strongly condemned caustic styptics. He also pointed out the value of turpentine in the vascular variety. In the discussion which followed, the President asked how syphilitic purpura should be classed? Signor Martenoli said a few words about marsh miasm. Dr. Daldy confirmed the preceding speaker's remarks, and also said there was always enlarged spleen in these cases. Dr. Hare said he always examined the spleen in such cases, but mentioned a fatal case in which purpura was the real cause of death, there being no enlargement of the spleen. Dr. Haviland Hall mentioned a fatal case of scarlet fever, complicated with purpura hæmorrhagica, in which death resulted from hemorrhage from the internal carotid. Dr. Cleveland related a fatal case of malignant smallpox complicated with very acute purpura. He had found turpentine and acetate of lead of great value. Mr. Braine recorded two cases of purpura following the use of chloral on the

sixth day after the first administration. Dr. Theodore Williams had seen similar cases. He thought Dr. Richardson had omitted an important point in not indicating what organs were involved in purpura. Dr. Richardson, in his reply, dwelt on the division of the disease into three types; he did not know in what class to place malarious purpura, but the syphilitic variety he placed in the second class, as also another form from overuse of mercury, and that caused by chloral. He had no direct information as to the pulse.—*Lancet*, Nov. 21, 1874.

21. *Treatment of Gout and Uric Acid Deposits by the Ferruginous Benzoate of Lithia.*—Various works recently published have spoken in high terms of the use of benzoate of lithia in cases of gout and uric acid urine, and MM. Dalkiewicz and Mallez have recommended its use combined with ferruginous preparations. This is an instance of rational therapeutics, for benzoic acid in passing through the body undergoes conversion into hippuric acid at the expense of the proteic substances, which are the principal sources of uric acid. Hippuric acid forms with the ordinary bases of the body—as soda, potash, and ammonia—salts possessing a high degree of solubility, whilst the urates of these same salts are insoluble in the liquids of the economy, and form almost exclusively the gravel of the urine and the *tophi* of the joints. M. Gubler has hence given, in his *Commentaires du Codex Medicamentarius*, the preference to the use of the benzoic acid. But this acid cannot be employed *per se* for a long time, as is shown by the experiments made in the Paris hospitals. M. Tréhyon has therefore thought it advisable to associate lithia with the benzoic acid, producing a very soluble salt, which prevents the fresh formation of uric acid and forms with that which exists a urate of lithia, which is the most soluble of all the urates. Like all the alkaline preparations, however, this, if continued too long, has its inconveniences, and M. Tréhyon has had the excellent idea of adding iron to it. Experience has shown that he has not been mistaken, various writers having published statements showing the advantages they have seen follow the use of the compound preparation.—*Practitioner*, Oct. 1874, from *Le Progrès Médical*, July 25, 1874.

22. *On the Finer Anatomical Changes in Typhoid Fever.*—Dr. KLEIN, of the Brown Institution, has lately made some interesting observations on the above subject. Sections of the hardened ileum of typhoid patients show, according to him, that an active absorption of peculiar organisms goes on in the mucous membrane over, and especially around, the Peyer's patches. These organisms are carried from thence into the lymph-canals and the venules of the mucous membrane.

In the earliest case which he examined, where death had occurred on the seventh day after the first appearance of headache, the crypts of Lieberkühn were found to contain peculiar greenish-brown spheroidal corpuscles of very variable size, the largest being twice or three times as big as a human red blood-corpuscle, and the small ones only half or a quarter as large. Where these bodies lie closely grouped together, as is generally the case, they appear of a dark olive-green colour; and the corpuscles at the edge of such masses, or where they are completely isolated, exhibit transitional forms, due to incomplete subdivision. Similar corpuscles are found in the tissue of the mucous membrane, where they appear to be contained in the lymphoid cells of the adenoid tissue. The minute veins, and also some of the lymphatic vessels, contain large numbers of them, and in the former they subdivide rapidly, so as to form greenish-yellow granular micrococci, arranged in groups of two or four, as well as in rings and other figures. The micrococci have their origin in a mycelium whose filaments are branched and apparently smooth, and of a greenish-yellow colour. These organisms occur not only in the neighbourhood of Peyer's patches, which are moderately swollen, but also in parts of the mucous membrane which to the naked eye show no alteration except slight general swelling, although microscopically the follicles of the patches in one case were found to have undergone the following changes: The central part of the follicle, especially where it lies in the submucous tissue, was converted into a

spongy substance by the formation of spaces around its bloodvessels, their wall consisting of the adenoid tissue with which the latter are sheathed. The lymphoid cells of this tissue were converted into large granular bodies containing two to five or even more nuclei, which greatly resembled the nuclei of endothelial cells. In several of the follicles true giant-cells were seen.

In a later stage (twelfth day) the mucous membrane itself showed somewhat similar changes, and the multinuclear lymphoid cells were found in its venules and in those of the submucous tissue as well as in the lymphatics of the latter. Dr. Klein is unable at present to give a decided opinion whether the above alterations are directly dependent on the presence of the micrococci, or whether they must be considered as secondary to changes in the vascular system. The passage of micrococci inwards from the free surface of the intestine can be traced through the epithelium into the substance of the mucous membrane, and especially towards the crypts of Lieberkühn; and this occurs in parts which are at some distance from the swollen Peyer's patches, and which appear nearly or quite unaltered to the naked eye.—*Med. Times and Gazette*, Oct. 24, 1874.

23. *Anointing with Cocoa-Butter in Scarlet Fever.*—Upon the recommendation of Schneeman, the anointing of the body with fat has been extensively practised in Germany during more than twenty years, with the view of lowering the temperature, and hastening the desquamation. Dr. BAYLES suggests, in this connection, the employment of cocoa-butter, as producing a more cooling and refreshing effect upon the patient, and emitting a more agreeable odour in the sick chamber. This agent, on account of its solid consistence, is more readily applied than either fat or oil, and is more easily absorbed by the skin. Furthermore, it is thought to afford the system a certain amount of nourishment. In severe fevers, the entire surface of the body should be rubbed with this substance every hour, or at least once every four hours. Its application is also recommended in typhoid fever, in cases where the patients manifest a dread of water, or where the application of water is impossible; likewise in other inflammatory diseases, especially the severer forms of inflammatory rheumatism, and in tuberculosis.—*London Med. Record*, Nov. 25, 1875.

24. *Iodine in Remittent and Intermittent Fevers.*—Dr. W. MUNRO states (*British Med. Journ.*, Nov. 7, 1874), that, having seen in 1869 a solution of iodine recommended by Willebrand in fevers, he has since tried it in many cases with very satisfactory results. He has used the tincture in doses of ten to fifteen minims (fifteen to twenty-five drops) three times a day, or four times if necessary. The following are illustrative cases. 1. A negro policeman had intermittent fever, which was stopped in two days by tincture of iodine, after fifteen grains of quinia had failed. 2. In a case of Nevis fever (the most obstinate remittent fever in the Leeward Islands), there was high fever twice daily. In a week, it was brought down to fever once in three days, which was ultimately broken by quinia. 3. In a case of Indian jungle-fever (seen in Cupar), the attacks often recur, but are always easily stopped by a few ten-minim doses of tincture of iodine. 4. A man of the 42d Regiment, attacked with Ashantee fever, had fever during the voyage home, and for about three weeks after his return, every third day, in spite of quinia. After a week's use of tincture of iodine, the fever disappeared, and did not return during another month that he remained in this locality. The iodine appears to Dr. M. to be more permanent in its effects than quinia. It may be of use in typhoid and typhus fevers. Dr. Willebrand recommends it to be given every two hours in such cases. It must always be given in plenty of water—about a wine-glassful.

25. *Hydrate of Croton-Chloral in Megrin.*—Dr. SIDNEY RINGER states (*Brit. Med. Journ.*, Nov. 21, 1874), that, remembering how closely megrim is allied to neuralgia, and how useful hydrate of croton-chloral is in facial neuralgia, he has been induced to try this remedy for megrim, and has found it useful in cases of which the following may be taken as a type.

"A woman has been subject for years to nervous sick-headache; then, owing to some great trouble, or to excitement, fatigue, or flooding, or prolonged suckling, or most frequently at the change of life, the headache becomes much more severe. The headache is continuous for weeks, perhaps months, but is intensified greatly by fatigue, excitement, or at the catamenial period. If not actually continuous, the headache comes, on daily, lasting, perhaps, for many hours, or several attacks may each day occur. The pain is often intense, and whereas, previously to the worst form of headache, the pain was probably limited to one bone, it now affects both, and perhaps the greater part of the head. The skin is generally very tender. There is also a sensation of bewilderment, or, as some term it, a stupid headache, and the patient often says she feels as if she should 'go out of her mind.' The sight may be dim, especially during the exacerbations of pain. Some patients of this class are very excitable and irritable, and are upset with the slightest noise. Nausea and even severe vomiting may occur with each exacerbation of the pain. Five grains of croton-chloral every three hours, or even oftener, will give in most cases considerable relief. I need hardly say, that the drug does not entirely free the patient from her attacks; but in one or two days, the pain ceases to be continuous, then the attacks recur, but only once or twice a week, the interval gradually extending till an onset occurs only every week, then about every fortnight, or even longer, till the illness assumes its old type and periodicity. In some cases, a week's treatment suffices to bring back the headache to its original type of an attack once in three or four weeks. Then the croton-chloral appears to be far less serviceable, manifesting but slight effect on the periodical attacks. In many cases of ordinary periodical headache, the patients say that, in the milder forms, the drug distinctly lessens the severity and duration, but in the severer forms it is without effect, even when sickness is absent. In those cases accompanied by severe vomiting and retching, croton-chloral is useless, being speedily rejected.

"Croton-chloral, I have found, will relieve the slight attacks experienced by some delicate and nervous women after any slight fatigue or excitement.

"In the continuous sick headache just described, as the pain grows better so the cutaneous tenderness disappears. It seems to me that, in many instances, two kinds of headache coexist, one sometimes predominating, sometimes the other. One appears due to affection of the cutaneous nerves, and is generally accompanied by tenderness. Patients describe the other as a 'stupid headache,' 'a feeling of bewilderment,' 'a bewildering headache.' After the dispersion of the first form by croton-chloral, this stupid headache often continues, but may ordinarily be relieved by bromide of potassium. Indeed, in many cases, I have found it useful to combine these remedies."

26. *Transfusion of Lamb's Blood in Pulmonary Consumption.*—Dr. THEODORE WILLIAMS communicated to the Medical Society of London (Nov. 9th) a case of this related by the recipient, Dr. Redtel, of Köhen. The author, who had marked tubercular consolidation of the left lung, and ulceration of the larynx, accompanied by a certain amount of pyrexia and dysphagia, was transfused with lamb's blood by Dr. Hesse, of Nordhausen, on the first of July, and he narrates his symptoms after the operation. The apparatus consisted of two glass tubes and an India-rubber pipe filled with cold solution of carbonate of soda. By this means blood flowed from the lamb into the median basilic vein of Dr. Redtel for ninety-five seconds. The first sensations were warmth in the arm, formication, and redness of the face, and after fifty-five seconds dyspnoea commenced, which became so intense that the operation had to be discontinued at the end of ninety-five seconds. Violent pains in the loins succeeded, which, though diminished in intensity after the cessation of transfusion, lasted some hours; these afterwards assumed a pulsatile character, synchronous with each arterial beat, and were assigned by the author to pressure by the distended inferior vena cava and abdominal aorta on the lumbar sympathetic. Forty minutes after the operation a general rigor, with slight cyanosis, appeared, followed an hour later by reaction and profuse perspiration, lasting for five hours: pulse 140; respiration 32. The patient slept without drugs, though badly, on

account of his cough. On the second day the urine contained a trace of albumen, and five days later the usual eruption of urticaria appeared, accompanied by rather high fever, greatly prostrating the patient; there was improvement in the appetite on the 8th of July. The operation produced no change in the symptoms except the cessation of dysphagia. Physical examination, however, showed considerable diminution of lung consolidation. Hesse regulates the quantity of blood transfused by the patient's appearance and sensations, and recommends the operation in cases of phthisis where anæmia is a marked symptom, and specially where the disease is ushered in by extensive hæmoptysis, accompanied by slight or doubtful physical signs. The pulse is one great indication; if it be full and strong the transfusion is dangerous. He has performed the operation fifty-two times with but one bad result. Dr. Redtel suggests the use of transfusion of lamb's blood in time of war, to supply the great losses of blood after severe wounds, and he concludes by stating that three weeks after the operation he was gradually becoming worse, having reaped no material benefit from it. The President then mentioned a case at the German Hospital, in which transfusion had been tried, but which had terminated fatally. Dr. Aveling objected to the instrument used in the case of Dr. Redtel, as it did not measure the amount of blood transfused; he also preferred transfusing human blood.—*Lancet*, Nov. 21, 1874.

In the *Berliner Klinische Wochenschrift*, Dr. THURN relates several cases in which the direct transfusion of lamb's blood was employed. H. O., æt. 36, was supposed to be in consumption, with night-sweats, cough, diarrhœa, and extreme weakness. For a long time he had been subjected to various kinds of treatment without relief. On March 20, 1874, at 3.30 P. M., assisted by Dr. Stahl, assistant physician to the Frankfort Hospital, transfusion was begun. The temperature was 98.24° Fahr., the pulse 88. For the first thirty-five seconds no symptoms appeared. After forty seconds the veins filled, and he got more colour. At fifty seconds he began to breathe quickly, and this increased up to ninety seconds, when he laboured for breath, and the sight was confused. At the end of 105 seconds he seemed to be fainting, and the transfusion was stopped. The temperature was 98.9° Fahr., the pulse 92. The difficulty of breathing lasted fifteen minutes, and then gradually diminished. He complained of great heat and pains in the back. At 4.15 P. M., a severe rigor came on, which lasted an hour. The temperature was 103° Fahr., the pulse 116; pains in the back and head, and heat of body continued to 8.30 P. M., when he perspired; at 9 P. M. the temperature was 99.14° Fahr. On March 21, he had had a good night. The morning temperature was 98.4° Fahr., the pulse 84. He felt somewhat improved, and had a better colour. At 9 A. M. he passed some urine which contained albumen and blood-corpuscles. This continued throughout the day. The evening temperature was 100.2° Fahr., the pulse 96°. On March 22, the temperature in the morning was 98.8°, in the evening 100.6° Fahr. He was able to leave his bed, which he had not done before for some time. There was albumen, but no blood in the urine. On March 24, he was able to go out. The albuminuria was less. On April 2, he was improved in every respect. He had had a little urticaria; the urine was normal. The instrument used was an India-rubber tube, with a glass tubule at each extremity. The lamb was between five and six weeks old, and lost during the operation 520 grammes (nearly 19 ounces) of blood, about half of which was transfused.

Dr. Thurn has had four other cases. Three were cases of phthisis. Hasse's method was used in all. In one case neither blood nor albumen was observed in the urine. Two of the patients decidedly improved; another was in the last stage of consumption, and died four weeks after the operation, after having felt better for the first fourteen days. The quantity of blood used was from 180 to 200 grammes. The fourth was a case of severe menorrhagia. The patient became bloodless, unconscious, and was apparently dying. Subcutaneous injections of ergotine and cold applications were used without avail. Transfusion was performed on May 5, 1874, at 11.30 A. M., and lasted 125 seconds; pulse, 120; respirations, 36. The patient became conscious during the operations, and complained of pain in the back and oppression of breath. The lamb had lost 390 grammes in weight. At 12 o'clock there was great heat

of skin and pain in stomach. At 1.30 P. M., she had rigors, lasting nearly an hour; temperature, 101.3°; pulse, 96. After the rigor she slept for an hour and a half, and felt better. The menorrhagia was much less; cold applications were continued. Next day she felt improved, but very weak, with occasional pains in the back. In the morning the urine contained blood; in the evening this had disappeared and had given place to albumen. In a few days the albumen had disappeared, and in six days the patient was placed on tonics, and ultimately recovered.—*London Med. Record*, Nov. 25. 1874.

27. *Overstrain of the Heart*.—Prof. SEITZ has collected many examples of this condition, and deduces from them their clinical history. It is thus briefly traced. A man, still young, is admitted into the hospital with a history of good health generally prior to his present illness. He has worked hard, but is no longer able to do so, the slightest effort brings on dyspnoea and palpitation; he has a feeling of constriction across the chest, and the præcordia seems to be oppressed by a heavy weight. Any further efforts induce pains over the cardiac region, shiverings, cough, and hæmoptysis; sometimes also there is loss of consciousness. The tendency of the malady is to advance in each particular symptom; the patient is threatened with suffocation during the paroxysms, the face grows livid, the lower extremities become œdematous, and at times anasarca supervenes, with effusion into the serous sacs. The predominant feature is the dyspnoea, and everything points to heart disease; for, besides the symptoms narrated, the pulse is irregular, small, and feeble, the cardiac impulse weak, the præcordial dulness either normal or considerably increased, and the heart-sounds heavy and not clear. But usually there is no murmur; now and then a very slight souffle with the first sound is audible, and occasionally some slight rubbing may be detected. The diagnosis suggested is either insufficiency of the mitral valve or pericarditis.

In some cases, the state of the patient improves sufficiently to allow of his discharge and recommencing work, but at the end of a few weeks the former symptoms reappear, and he succumbs either suddenly or else from advancing asphyxia. The autopsy exhibits congestion of all the viscera, such as is met with in heart disease generally; the pericardium normal, the heart dilated, but with its walls of normal appearance and structure, though possibly here and there a few fibres may be found degenerated, and the valves normal. Either among the columnæ carneæ or in the auricles are to be found some old coagula. There is, in short, a remarkable absence of organic changes that might fairly have been anticipated. The symptoms are indicative of cardiac weakness, but it is clear that such weakness is independent of appreciable lesion of structure. At the same time the circumstances under which the disorder made its appearance are those of overstrain of the heart by excessive work. The slight auriculo-ventricular souffle sometimes heard is attributable to a relative insufficiency of the orifice attending the dilatation of the heart. The condition above described corresponds with that designated “le cœur forcé” by M. Beau, and also with the “asystolie” of M. Raynaud. The same condition has been referred to by several British physicians, particularly by some in the Army Medical Service; and, we may add, over-exertion in boat-racing is one of its well-established causes. It will be well, however, to have its pathological significance put on a wider and more evident basis, both with the view of more correct diagnosis and treatment.—*Brit. and For. Med. Chir. Rev.*, Oct. 1874, from *Deutsches Archiv*, Bd. xi., xii.; and *Revue des Sciences Méd.*, tom. iii., 1874.

28. *Ulcer of the Stomach principally treated by Nutritive Injections*.—Dr. THEODORE WILLIAMS related to the Medical Society of London a case of this. A laundry-woman æt. 30, with strong hereditary history of phthisis, was admitted under his care with symptoms of hæmatemesis, the vomiting of blood, which was small in amount and clotted, being preceded by sharp pain in the left hypochondrium, nausea, and occasional vomiting of food. The hæmatemesis generally occurred between 10 and 11 A. M., had lasted for five weeks, and the patient had lost much flesh and strength. She was at first placed on liquid diet and treated by styptics and a local blister. The bleeding stopped, but the

pain persisted, and a distinct area of tenderness over the cardiac end of the stomach, most marked when that organ was empty, on deep pressure, led to the diagnosis of ulcer of the posterior wall. All food by the mouth was then discontinued, and the patient fed by injections of beef-tea, eggs, and brandy, and pills of creasote, belladonna, and afterwards of oxide of silver, given. Under ten days of this treatment the symptoms entirely subsided, and the patient was found to have gained some pounds of flesh. She was placed on light diet, and, with the exception of a slight relapse, when the injection treatment proved equally successful, made a rapid recovery, gaining ten pounds in the hospital. The catamenia were regular, but scanty. Dr. Williams stated that the diagnosis was founded on, (1) the distinctly localized pain; (2) the tenderness on deep pressure; and (3) the time of vomiting; and quoted statistics to prove the common occurrence of ulcer of the posterior wall of the stomach. He strongly urged the advantages of rest to the stomach in these cases, and drew the Society's attention to the remarkable gain in weight while the patient was entirely subsisting on the nutritive injections, showing that we possess in the rectum an effective second stomach, which, if it does not afford us the pleasures of digestion, spares us many of its pains.—*Lancet*, Oct. 24, 1874.

29 *Ammoniacal Urine and Urinary Fever*.—MM. GOSSELIN and ALBERT ROBIN have endeavoured to determine, experimentally, the cause of the fever and other accidents that ensue upon operations on the urinary passages. In fulfilling their task they examine severally, (1) the character and nature of the decomposition urine may undergo; (2) the general and local action of carbonate of ammonia dissolved in water only and also in urine; and (3) the action of ammoniacal urine. A fourth point, that concerning remedial measures, they postpone for consideration in a future memoir.

The first division of the essay goes only to demonstrate our ignorance of the nature and the modes of reaction of the components of urine undergoing decomposition. The only fact that seems clear is, that ammonia is separated. The second division of the memoir concerning the action of ammonia dissolved in water and in urine respectively, is dealt with experimentally. The results obtained with solutions of ammonia are on the whole confirmatory of those arrived at by other experimenters. As might be anticipated, they differ according to the strength of the solution, the rapidity of injection, and the quantity injected. When given in strong and large quantities, after prodromata of restlessness, cries, slight convulsive movements, loss of power in the hind legs, and from two to four tetanic attacks follow. Respiration is noisy, slow, and deep. The pulse feeble and slow, epistaxis common, and the fall of temperature in direct relation to the poisonous dose and its influence in producing tetanus. Coma, interrupted by more or fewer convulsive shocks, supervenes on the termination of the tetanic state, but, except the poisonous dose have been too large, recovery may follow. Among other phenomena are, albuminuria and an alteration of the blood, consisting in a diminution of globules and an augmentation of albuminoid matters, attended by a change of colour to a reddish-brown and a loss of coagulability.

When the ammoniacal fluid is injected in feeble but repeated doses, the consequences observed are little marked. No convulsive or tetanic seizures ensue, and in place of reduced temperature there is an elevation, which is maintained within a certain range of oscillations, until the local effects become destructive of vitality. It is thus held to be demonstrated, that the repeated and continuous absorption into the system of ammonia through an abrasion or wound is not followed by symptoms of general poisoning, but only by local injuries, represented chiefly by topical suppuration. And further, it appears that the consequences of poisoning by a watery solution of ammonia do not bear any clinical resemblance to those of the absorption of urine as witnessed after operations on the urinary passages.

The next series of experiments was undertaken to determine the action of normal urine when injected, and the results arrived at were, that when the urine is injected in small but repeated doses, it is rapidly absorbed and its effects only slight and local. The thermometer showed some febrile action, of limited

amount, and autopsies revealed no changes, saving some slight renal congestion.

On the other hand, when ammonia, even in small quantity, is added to urine, the noxious character of the mixture becomes very apparent and death an early consequence. Fever is set up in four or five days: the oscillations in temperature are diurnal, with a progressive upward movement; whilst defervescence is sudden and soon followed by death. The toxic power increases in direct proportion with the quantity of ammonia added. Albuminuria and visceral congestions appear, and the blood readily coagulates, even in vessels of medium size, unlike what happens with injections of simple aqueous solutions of ammonia, or with those of normal urine. Moreover, local abscesses more quickly form, together with purulent deposits. An examination of these phenomena exhibits a considerable relationship between them and those of urinary fever (*fièvre urinaire*).

The next stage of investigation was that of the effects of ammoniacal or decomposing urine; and the experimenters took pains to determine the alkalinity and the quantity of ammonia existing in the specimens of urine they employed. Their experiments proved such urine to be more noxious than the artificial mixture of urine and ammonia. The fever induced sprang up almost immediately after the first injections, and death quickly resulted. Accompanying the fever were noted also various symptoms; agitation, cries of pain, diarrhœa, loss of appetite, and towards the end, difficult noisy respiration, lateral decubitus and albuminuria. The febrile condition observed recalled very closely that attendant upon operations on the urinary passages. After each injection there was an immediate elevation of temperature, which after a while decreased; to be presently revived by a fresh injection, until ultimately a continued febrile state was set up, terminating by sudden defervescence and death.

The addition of ammonia to the decomposing urine previously employed rendered it vastly more poisonous. Moreover, if instead of excluding air as was done in the injections already alluded to, air was admitted into the wounds to mix with the injected material, the consequences were still more fatal; apparently so from the more rapid decomposition set in motion, and the quicker evolution of ammonia.

One deduction from these experiments is, that in the case of an operation, where the urine is acid, two conditions are required to develop poisonous consequences, viz., the presence of air and the admixture of pus or of blood with the urine, as essential factors in its decomposition. Another is, that although the action of decomposing urine be more intense in proportion to the quantity of carbonate of ammonia it contains, yet that this last-named substance is not the sole factor in the production of the evils consequent upon the absorption of urine after operations; for a fetid specimen is more noxious than one not so, although the proportion of ammonia be alike in the two.

Lastly, as a matter of pure hypothesis, the authors of the essay suggest an analogy between urinary fever and septicæmia, and the possible influence of microscopic organisms introduced into the blood by the medium of decomposing urine.—*Brit. and For. Med. Chir. Rev.*, Oct. 1874, from *Archives Gén. de Méd.*, May and June, 1874.

30. *Strangury from Local Application of Tincture of Iron.*—Mr. EDWARD ARKINSON, of Leeds, relates (*The Practitioner*, Oct. 1874) the following very curious case of this. 'A gentleman of 48, robust, stout, and generally healthy, very abstemious, but of (perhaps inherited) gouty diathesis. Coming out of church in the dark, he stumbled, and slightly twisted his leg, which was followed by painful swelling of the inguinal glands. In a week the swelling assumed the characters of gouty inflammation, and soon after an erysipelatous blush appeared over the groin and upper part of the thigh. I painted it with tincture of iron, and the following day I found him suffering from very severe strangury. Within twenty-four hours the symptom had quite disappeared, and never returned. This occurrence rather puzzled me as a result of the painting with iron, and I was naturally disposed to refer the pain to gouty kidney. But a day or two after my patient told me he remembered to have had a precisely

similar attack when at 20 years of age he was wrecked on an island in the China seas, robbed of his clothes, and compelled to accept such garments as the natives offered him. In consequence, as he supposed, of wearing this clothing he acquired an eruption round the waist which he styled "itch" (but which may probably have been *herpes zoster*). On reaching Singapore a surgeon whom he consulted painted the eruption with tincture of iron, and thereupon he was seized with violent strangury which lasted a day or two. The coincidence, as it appears to me, proves that this agent may be classed among those which can induce strangury in certain persons—though, perhaps, in those only who have a tendency to gout.

31. *Inoculability of the Pustules of Ecthyma*.—M. VIDAL states (*Gaz. Hebdom. de Méd. et de Chirurgie*, Nov. 20, 1874), 1st, that the pustules of ecthyma of typhoid fever, and especially of ecthyma simplex, are auto-inoculable; 2d, that the pustules produced by the auto-inoculation run the same course as the pustules which arise spontaneously, and that the pus from them is inoculable the fourth day; 3d, that the contents of the pustules of the second generation is auto-inoculable; 4th, that its activity goes on diminishing and ceases at the third or fourth generation.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

32. *Lister's Method of Treating Wounds*.—Prof. DEMARQUAY, after having given Prof. Lister's mode of dressing wounds and ulcers a fair trial at the Maison Municipale de Santé, lately read a paper before the Academy of Sciences, containing the results of his observations. He said that, however successful the Scotch surgeon might have been with this method, he himself could not say that it possessed any particular advantages over the other methods in ordinary use; that, on the contrary, it had a great many drawbacks, which he summed up as follows. The atmosphere surrounding the patient is impregnated with carbolic acid, which is disagreeable to the surgeon and to his assistants; moreover, the hand of the operator is numbed and becomes the seat of a pricking sensation, which sometimes lasts more than twenty-four hours. The spray which is directed constantly on the wound favours hemorrhage, and it is difficult to estimate the quantity of blood thus lost; besides which, it is more difficult to stop the bleeding. Dr. Demarquay made his observations on eight cases on which he had operated; viz., four of tumour of the breast complicated with enlargement of the axillary glands, two of castration, one case in which a chondromatous tumour of considerable size was removed from the right parotid region, and, lastly, a case of removal of a fibro-plastic tumour from the abdominal parietes. Among these eight patients, four were the subjects of venous hemorrhage on the day of the operation, one of arterial hemorrhage (secondary) on the eighth day, and another was affected with purulent infection, which terminated fatally. Dr. Demarquay remarks that no accidents occurred in any of the cases operated on about the same time and in the ordinary way, and the following are the results of his observations on the eight cases referred to above. 1. The wounds were languid-looking, atonic, pale, indolent; which, however, did not prevent cicatrization. 2. The pus, which flowed in large quantity, was of serous character, and contained only a few pus-globules. 3. The carbolic acid seemed to render the blood more diffuent, prevented its coagulation, and thus favoured primary hemorrhages at the surface of the wounds. Dr. Demarquay next inquires into the effects of Lister's method upon the vibriones. The pus escaping from the wound was carefully examined each day or every second day by the microscope, and these microzoa were constantly found in it. These, he added, were not peculiar to this mode of dressing, but they were found in all the other plans employed, such as alcohol, tincture of eucalyptus, glycerine,

etc.; but, notwithstanding this, the wounds in all the cases healed, except one, which proved fatal from purulent infection. From these inquiries Dr. Demarquay concludes that the different modes of dressing employed in the hospitals do not prevent the development of germs, and that the presence of a certain number of protozoa in the wounds, kept very clean, does not interfere with cicatrization.—*Brit. Med. Journ.*, Oct. 17, 1874.

33. *New Method of operating on the Larynx.*—The *Centralblatt für Chirurgie* for Aug. 15th contains an interesting account of a new method of conducting operations on the larynx, introduced by Dr. A. EYSELL, of Halle. Every one, he says, who employs the laryngoscope must be aware how difficult it is to reach a tumour growing in the lower part of the larynx, which is not sufficiently movable to be driven above the level of the vocal cords by forced expiration. He has, however, succeeded in removing them in the following way: Whilst observing the larynx by means of the laryngoscope, for which he employs either daylight or the electric light, an exceedingly elastic needle is passed through the skin and crico-thyroid membrane, into the larynx exactly in the middle line, and immediately beneath the thyroid cartilage. The needle is then made to transfix the tumour, and by depressing its handle the latter is forced up into the ventricle of the larynx. No hemorrhage takes place, the only pain felt is during the transfixion of the skin, and no local mischief has followed even frequently-repeated operations. If it be intended to canterize or tear away the tumour, the patient is directed to hold either the mirror, or better still, the needle; and in this way Dr. Eysell has succeeded in removing two fibromas from the lower part of the laryngeal cavity since last November. Since that time he has endeavoured to operate on tumors, with the needle itself, which could not conveniently be attacked through the mouth, and for this purpose he employed the needle used by Schwartz for performing paracentesis of the tympanum; but even this ought to be gently heated before use, in order to make it more pliable. It was passed as before into the larynx, and several incisions or pricks made into the tumour, which was then lifted up and cauterized. In a case where the vocal cords were adherent to one another for their anterior two-thirds, as the result of a suicidal cut throat, which caused considerable shortness of breath on slight exertion, a narrow tenotome was passed through the scar, 0.5 centimetre broad, into the larynx. When the point appeared behind the triangular adhesion, the handle was firmly depressed, and by drawing the knife downwards the cords were separated almost to their origins. In the same way, no doubt, injections might be practised on laryngeal tumors, by the employment of a needle-pointed syringe. It may be impossible to perforate the thyroid cartilages in old people on account of calcification.—*Med. Times and Gazette*, Oct. 17, 1874.

34. *Extirpation of the entire Larynx.*—Prof. BILLROTH of Vienna performed this formidable operation for the second time on November 11th, in the Allgemeine Krankenhaus in Vienna. The patient, a man aged 50, came about six weeks previously under the care of Dr. Schrötter, the teacher of laryngoscopy, complaining that he had suffered for some time from hoarseness and increasing difficulty of breathing. Laryngoscopic examination detected on the left vocal cord a nodulated growth, apparently closely adherent to the mucous membrane. It was diagnosed to be epithelioma. As the disease made rapid progress, the whole interior of the larynx becoming affected and the dyspnoea constantly increasing, the patient was transferred to Dr. Billroth for the purpose of operation. Dr. Billroth gave a favourable prognosis with regard to the return of the disease, on the ground that no infiltration of the adjacent lymphatic glands could be detected. The operation of extirpation of the larynx was performed by Dr. Billroth, in the presence of a large number of medical men and students. Microscopic examination completely confirmed the accuracy of Dr. Schrötter's diagnosis. The patient died on the night of the 16th, apparently from hypostatic pneumonia.—*Brit. Med. Journal*, Nov. 28, 1874.

35. *Reduction of a Hernia.*—Well-read surgeons will read with some surprise the statement made in the *Gaz. Hebdom.* (20th Nov.) that M. PERIER communicated to the Surgical Society of Paris (Nov. 19th) a case of strangulated inguino-scrotal hernia reduced by a *new method*, which new method consisted in an assistant raising on his shoulders the legs of the patient, the head and shoulders resting on the bed. In this position M. Perier made the taxis and replaced easily the hernia. This method, all our readers know, has no novelty, but may be traced far back in the history of our art, and an excellent paper on this subject by Dr. Leasure was published in our No. for April last.

36. *Treatment of Orchitis by Absolute Rest.*—Dr. PONZONI furnishes an account of the great success which, at the Hospital at Lodi, has attended the treatment of orchitis, whether traumatic, idiopathic, or secondary to blennorrhagia, by absolute repose. Dr. Fiorani, the senior surgeon of the hospital, introduced the treatment some years since, under the belief that the cases which were said to recover under the use of collodion, nitrate of silver, etc., really did so in consequence of the immobility which accompanied these different modes of treatment. In 1872 he published twenty-two cases in which a cure was effected by this means alone. Since that time the practice has been continued, and Dr. Ponzoni now publishes twenty-eight additional cases, of which number sixteen were examples of blennorrhagic orchitis, five were idiopathic, and seven traumatic. To these are also to be added two cases of idiopathic epididymitis, and two cases of spermatitis, one blennorrhagic, and the other traumatic; making thirty-two in all. In two of the cases of blennorrhagic orchitis, repose was accompanied by the application of collodion in order to secure a greater quietude to the organ in consequence of the indocility of the patients, caused in one case by a cough, and in the other by abdominal pain. In two others the pain had been dissipated by rest, and the size of the testicle had become reduced, but, as the resolution seemed to be delayed, it was hastened by the application of ointments. In all the others simple repose sufficed, the medium time required for the cure being much less than that required by other modes of treatment. The rest has, however, been absolute, the patient not even getting out of bed to pass his evacuations, but remaining in the supine position, having the testis supported by a small cushion placed between the scarcely separated thighs. Under this procedure the patient feels some amelioration even by the next day; the pain and any febrile action that may accompany it soon subsiding, and the organ gradually recovering its normal size.—*Med. Times and Gaz.*, Nov. 7, 1874, from *Gazetta Medica Italiana*, Oct. 24.

37. *Dislocation of both Clavicles.*—Dr. A. H. CORLEY relates (*Dublin Journ. of Med. Sci.*, Oct. 1874) the following example of this rare accident. "Patrick B., æt. 13, was admitted into Jervis Street Hospital on the 30th January, 1874. He was a worker in a neighbouring printing establishment, and, a short time before his admission, his left hand was accidentally caught between the two cylinders of a printing press. His arm was rapidly drawn in nearly as far as the shoulder, and just as his side and head struck against the most projecting part of the cylinders, the machine was stopped. Another moment of motion, and the consequences can be imagined. On examination, the left arm was powerless, cold, dark, and contused from the wrist upwards; and towards the axilla, on the inner aspect of the arm, the subcutaneous tissues seemed to have been 'rolled up' into a projecting transverse ridge, but there was no breach of surface, whilst the bones of the arm, forearm, and hand were, strange to say, perfectly uninjured. He complained most of pain at the root of the acromion process of the scapula, posteriorly, and at that point there was considerable contusion and ecchymosis. By running the finger along the spine of the scapula a gap could be distinctly felt at the contused part, and by grasping and elevating the shoulders crepitus was elicited. There was much difficulty at first in ascertaining the exact position of the broken part of the acromion process, as, towards its clavicular end, nothing could be felt but a well-marked bony prominence, apparently continuous with the clavicle. On making a very care-

ful examination, a dislocation at the acromio-clavicular articulation was detected, the end of the clavicle being dislocated upwards, or, to use the most orthodox surgical phraseology, the acromion was displaced *downwards*, and the bony projection was really the end of the clavicle. The condition of the limb gave me much uneasiness, as no pulse could be felt at the wrist, and no throbbing of any kind existed below the axillary artery. The most remarkable part of the accident remains to be described. On the other, the *right* side, there was a want of freedom of motion in the whole extremity, and the boy complained of pain about the sterno-clavicular joint. On examination, the sternal end of the clavicle was discovered to have been dislocated *behind* the first bone of the sternum. It could be readily drawn out and replaced in its normal position, but would immediately slip back when left to itself. The bone had been driven *horizontally* backwards and inwards, but did not exercise any inconvenient pressure on the trachea or other important parts. It was at once evident that there would be a difficulty, if not an impossibility, in keeping the bone in its place, for the injured shoulder would not bear the pressure of a figure of ∞ bandage—the only means of keeping the deformity reduced, and, besides, after a day or two, the pain and tenderness wore off, and the boy seemed to think he had quite sufficient power in using the extremity. In about an hour after the accident, the injured arm, having been wrapped in cotton, became warm again, and, although pulsation did not return, and was not felt in the radial artery till the fifth day, still the increase of temperature proved that, at least, collateral circulation was restored, and the danger of gangrene diminished. On the third day it was possible to apply a sling to keep the left elbow up, and a pad, placed over the end of the clavicle, tended, as much as possible under the circumstances, to restore the articulation to its normal condition. I am constrained to say that, when he left the hospital, after twenty-eight days' treatment, the *appearance*, both of that shoulder and the right sterno-clavicular articulation, would not bear, creditably, the survey of a critical eye; but as to their functions, I can only say that about a fortnight after the boy's discharge from hospital, I saw him in the street sliding down the *wrong* side of a ladder, from the third story window, in a manner that impressed me forcibly with the completeness of his recovery."

38. *Dislocation forwards of the Styloid End of the Ulna*.—Dr. T. E. PURDON records (*Edinburgh Med. Journal*, Oct. 1874) the following case of this rare displacement. A man got his hand pushed in between the rollers of a planing machine, his forearm being drawn in likewise in a slanting direction. The rollers, placed one above the other, gave a little, so far saving the arm. The hand and wrist were much twisted. On examination, the limb had a curious appearance, there being a hollow on the ulnar side posteriorly, while in front, just above the wrist, a hard swelling was felt and diagnosed to be the styloid end of the ulna, displaced forwards.

The elbow being fixed, extension being applied to the hand, and pressure to the projecting bone, reduction was easily accomplished, the bone giving an audible click as it returned to its place. The forearm and carpus were then placed in two well-padded Gooch splints.

39. *Treatment of Chronic Strumous Synovitis, more especially of the Knee*.—Mr. RICHARD BARWELL, in an interesting article on this disease (*Brit. Med. Journ.*, Oct. 17, 1874), states "that the obstinacy, the reputed incurability of these cases depends not on too high, too violent an action, but on want of action—on insufficient power to continue onward the processes which have begun. Therefore joints in this condition are white and bloodless-looking, and their temperature, instead of being from two to three degrees higher than that of the other side, is frequently the same, and frequently lower. Therefore, I conceive that, to continue to keep such a joint at perfect rest, poulticed, or with lotions, is a mode of treatment much adapted to prolong such injurious inactivity; and I have for some long time past adopted frictions, pressure, passive and then active movement, with considerable success, as several cases I could report

would show. But from such reports I may here refrain, as I wish to introduce to your notice a more rapid and decisive method of dealing with such disease.

"Let me again observe that the object of the treatment is to induce in this sluggish cell- or granulation-tissue such action as should prevent fatty or other forms of degeneration, and promote its formative action—its conversion partly into fibrous tissue, its absorption partly by the active work induced. As we stimulate indolent flabby granulations of an old ulcer or of a wound by nitrate of silver or sulphate of copper into the production of tissue, so it struck me I might also, by a direct application, stimulate sluggish tissue of a strumous synovitis into more healthy condition; and for this purpose injection of minute quantities of a stimulating drug seemed to me the most direct method. I therefore began experiments, injecting first one fluid, then another, but always with such caution that I never had an unfavourable issue nor evil result of any kind. It would merely be wasting time here to detail the several fluids that I have employed. The first used was iodine; and in none of my subsequent work have I found any so satisfactory. I began with a very weak solution, viz., ten minims of the tincture to an ounce of water. In all my later cases, I have employed half a drachm of tincture of iodine, filling up to the ounce with water. I have little doubt that a still stronger solution might be employed, but this strength appeared to answer all the purposes required with sufficient rapidity.

"The method of using the drug is simple: a syringe with very fine needle should be used, and care must be taken not to inject into the cavity of the joint, but into the thickness of the morbid tissue. Moreover, I need hardly, after what has been said, reiterate that proper selection of cases must be cared for. Injection must not be employed when any active inflammatory process is going on; the temperature of the joint must be not at all higher, or but a portion of a degree higher, than that of the other side. Moreover, there must be either no pain, or only that dull aching, which is rather a sign of fulness of veins than of arterial hyperæmia. Starting of the limb, the symptom above all others which shows that the cancellous structure next the articular lamella is inflamed, shows also that the time for this treatment has passed by, unless such starting be only occasional, and not severe.

"When, in any case, all the favourable conditions are present, I puncture the skin in the softest and most prominent parts of the tumefaction, making from two to four punctures, as the case may demand or permit; into each of these punctures I inject about five minims of the fluid, withdrawing the needle a little as the piston descends, so that the liquid occupies a line rather than a spot of the tissue. After the injection, I use pressure by means of an elastic bandage, put on with such tightness as will just escape producing congestion or œdema of the limb below. The effects are quite painless save the puncture; in only one case out of seventeen has there been slight aching for about two minutes. In all cases, decreased size, increased hardness of the tumour, with disappearance of the dull aching pain has resulted, and renewal of use in the joint, to an extent according to the period when it came under treatment, *i. e.*, according to the amount of injury which the disease had already produced. This period is different in different cases; in some, the malady commences of itself as a painless, or all but painless, enlargement, the child running about gayly on a swollen and somewhat stiffened knee; in others, the attack begins as an acute inflammation, which only after a time falls into the sluggish stage. It is evident that in the one form much more damage may be done to the joints before this treatment can be used than in the other. The further parts of the treatment must depend upon these differences: in some of the former, we may hope to regain a joint with fairly free mobility; in others this will be more restricted; and in the latter we must be content with only slight degree of motion. The amount of passive movement and of active movement to be employed in each case must depend on all these circumstances. I can only say that, as the tissues of the joint harden more and more under the use of injection, so may passive movement be used with considerable freedom.

"The especial point which I wish to insist upon is, that, after the first phase of the disease, strumous synovitis—the fungoid disease of the joint is not inflammatory—is not over-action, but under-action; and that some treatment to excite

action—not rest, lotions, etc., which discourage action—is the right method of treatment.”

40. *Ligature of the Primitive Iliac Artery*.—This operation has been performed but twice in Lisbon, first by Dr. BARRAL, and secondly by Dr. BARBOSA. The latter has communicated a history of his case, with a memoir on the operation, to the Royal Acad. of Sciences of Lisbon. The subject of Dr. Barbosa's case was a man aged 62, with an enormous aneurism, occupying the whole left iliac fossa and encroaching on the thigh. The operation was performed on the 7th Feb. 1873, and the patient died at 2 P. M. of the 14th. At the autopsy there was found very extensive purulent peritonitis, and pleuropneumonia. The tumour occupied the whole of the iliac fossa, its superior limit was a centimetre below the bifurcation of the aorta, and the ligature had been applied to the primitive iliac four centimetres below the limits of the tumour. There was no clot at the place of the ligature, but a neoplasm of the connective tissue, which tended to form a fibrous cicatrix.—*Revue des Sciences Médicales*, Oct. 1874, from *Gaz. Méd. de Lisbon*, Nov. 12 et seq., 1874.

41. *On Rupture of the Gluteal Artery*.—A case of rupture of the gluteal artery, leading to what is termed “a false consecutive aneurism,” is related in *Le Progrès Médical*, as having been brought before the Société Anatomique on March 6, by M. GUILLAUMET. The patient, a criminal, aged twenty-five, was admitted into hospital on February 14, 1874, in a state of extreme general anæmia. He had extensive disease of the heart, and the arteries over the whole body pulsated very violently, but without any tumour or bruit. In the right buttock was a “hard fluctuating” tumour (“tumeur dure et fluctuante”) about two-thirds as large as the head of an adult. It seemed to be beneath the muscles; the skin was smooth, tense, and shining, the veins enlarged, but not varicose. There was tenderness to the touch, the whole mass presented pulsation, and a strong souffle was audible over the whole of it. No cause was known for the disease. He had fallen about six feet, and struck his right buttock against a piece of furniture, ten months before (April, 1873), but had not experienced any particular inconvenience. He was put into prison a short time afterwards. The tumour had made its appearance a month before (January, 1874), after an unusual exertion. The tumour had been punctured, about a fortnight before his admission into hospital, with a bistoury, causing a small wound, which was still visible. According to the man's account, a clear serous fluid had escaped from this wound. The wound had afterwards bled a good deal, though not to any really alarming extent, and the anæmia dated from that time. After his admission an exploratory puncture was made by M. Th. Anger (under whose care and that of M. Legroux the patient was), and this gave exit to pure blood. Accordingly the disease was diagnosed as aneurism, and it was decided to inject it with perchloride of iron. But secondary hemorrhage came on from the wound, which it was impossible to repress, and the man died in a few days. *Post-mortem* examination showed extensive disease of the heart, and a good deal of atheroma of the large arteries. On dissecting the buttock, the muscles were found infiltrated with blood, and below them was an enormous cavity filled with clot partly laminated, or “active,” as the author calls it, on detaching which the ilium was found exposed and eroded. The gluteal artery was open, as if cut with a knife, just at the level of the posterior lip of the sciatic notch, the edges of the ruptured part being rounded off, something like those of a glass tube which has been melted in a lamp flame. Traces of atheroma were seen on the edges of the ruptured part. The lower end of the ruptured artery could not be found.

M. Legroux observed on the difficulties of the diagnosis, which could only be cleared up by exploratory puncture, and then discussed the question of treatment. Compression, he said, was impracticable; the application of ice could not produce any particular result; the opening of the sac and direct ligature of the artery, as practised by J. Bell Carmichael and Warren Stone, was too dangerous. There remained the injection of perchloride of iron, which was decided on under the authority of Nélaton's case, but the examina-

tion of the tumour shows that this would have failed, and the only effective measure would have been the ligature of the internal iliac, an operation, however, which could hardly be thought of in the man's condition. [In fact, it seems clear enough that the disease was absolutely incurable. Ligature above the rupture would in all probability have failed to check the hemorrhage, and the direct ligature of both ends of the vessel was apparently impracticable. It is, however, the only trustworthy measure in these cases of ruptured artery, which are very different in practice from aneurisms, though unfortunately they have received that name.]

Finally, M. Legroux speculates on the cause of the disease, believing that the artery, originally diseased, was injured by the fall, or possibly was ruptured at the time, and a small aneurism formed, which passed unperceived until either it or the contused artery gave way, at the time of the extra exertion, and the blood was poured out into the tissues of the buttock.

[It is worth the while of any one interested in this subject to peruse, along with this case, Mr. Marrant Baker's above referred to, and Servier's, in the *Gazette Hebdomadaire*, for 1868. The latter especially bears a great resemblance to the present case, and it is rather singular that it is not mentioned.]—*London Med. Record*, Oct. 7, 1874.

42. *Treatment of Popliteal Aneurism in the Aged.*—In a recent communication to the Paris Society of Surgery, M. DEMARQUAY called attention to the treatment of popliteal aneurism when it occurs in aged persons. However treated, according to his experience hitherto, it has usually terminated fatally. Before venturing to apply a ligature in a case we should make ourselves acquainted with the age of the arteries, which are sometimes much older than is the individual himself; and it is highly important to be cognizant of the state of the collateral circulation. It is not sufficient to be able to arrest all pulsation in the aneurism by compression of the artery, but this should be continued a sufficient time to enable us to judge of the physiological condition of the compressed limb—that is, whether the circulation continues, as shown by the absence of all pain and by the natural colour and temperature of the limb being maintained. Even in the adult, in whom the arteries retain their suppleness and dilatibility, the elements of a collateral circulation are limited, while in the aged the smallest arteries may be atheromatous. A ligature applied in this condition of things menaces the patient with two things—gangrene of the limb, accompanied by intolerable suffering and secondary hemorrhage, which, whatever may be done for it, will recur again and again until death closes the scene. Is forcible flexion of the limb to be had recourse to in such a case? This is a severe mode of compression, acting directly on the aneurism. If this be large, and the coagulum within it not yet organized, such compression expels the blood from the aneurism and prevents circulation in its anterior, while the forcible pressure of the leg on the thigh suspends the collateral circulation. The pain caused is also so great that many cannot bear it. If the stratification of the aneurism has commenced, and especially if its walls are enfeebled at any point, we may by this compression, the power of which we are not aware of, cause a rupture of the aneurism and an infiltration of the limb, which may compel so dangerous an operation in the aged as amputation of the thigh. While, therefore, he acknowledges the value of this mode of compression in the treatment of young persons suffering from not very large aneurisms, M. Demarquay sets his face against its application to aged persons. He has seen the attempt fail in the hands of Velpeau, Lenair, and Verneuil, and in all three of these cases the patients died after the injection of the perchloride of iron had also been tried. With respect to the perchloride of iron, he has had much experience, and has made a very successful use of it in injecting well-circumscribed erectile tumours. He has employed it, also, in small aneurisms—as of the hand, for example—when the isolation of the injected part is easy and the collateral circulation powerful. In such cases the perchloride coagulates the blood when in small quantity, and it irritates and inflames the capillary vessels with which it comes in contact, and especially the internal surface of the vessel by which it has penetrated. If too much

perchloride be not used, everything goes on well, and the patient is cured. When, however, this is injected into a popliteal sac it forms a chemical combination with the blood in the shape of a black magma, destitute of cohesion, and which may be carried into the circulation at the risk of forming emboli. In the aneurism itself fatal inflammation may be also induced. A mode of treating these aneurisms that may be followed safely is digital compression, when this is easily borne, and does not cause severe pains in the limbs, proving that the collateral circulation exists. When much pain is caused it should be suspended, and if this becomes intolerable it must be renounced. In such cases all that we can do is to condemn the patient to rest, and support the aneurism by a supple and elastic apparatus. The patient is not cured, but he is not condemned to a violent death; and may live a long time. When, however, the aneurism has so increased in size as to threaten to burst, the alternative of amputation or ligature may have to be chosen. In the mean time, the collateral circulation has become more developed, and M. Demarquay would then open the sac, and tie the artery above and below, according to the ancient method. —*Med. Times and Gaz.*, Oct. 17, from *Gaz. des Hôp.*, Oct. 3, 1874.

43. *Treatment of Varix by Injection of Hydrate of Chloral.*—In an article in the *Gazzetta Medica Italiana Provincie Venete*, Dr. TONOLI, after quoting Prof. Porta's memoir on the radical cure of varix (see *Supplement to Medical News*, Sept. 1874, p. 130), reports the following case under his own observation.

A man, æt. 49, had for a long time been the subject of varix of the internal saphena vein, extending from two finger-breadths above the ankle to the groin, where the vein was distended into an ampulla of a dark-blue appearance. At the middle of the leg, two finger-breadths above the knee, and near the middle third of the thigh, there were groups of large tortuous branches, without any trace of clots. Dr. Tonoli made a solution of equal parts of hydrate of chloral and water, and, having made the patient stand erect for five minutes, injected into the veins at each of four separate points, eighty centigrammes (about twelve minims) of this solution; the total quantity used being 3.20 grammes (about fifty minims). After the first injection, there was some escape of blood when the needle was removed. The vessels became obliterated at all the points where injection had been made. On the fifth day, there was distinct induration in the course of the saphena. It extended to the collateral groups, which on the ninth day were found to be harder. Slight phlebitis occurred at the injected points. The external saphena vein gradually became reduced in size, so as to be scarcely visible; to the finger it felt as a long cord. In two months and a week the cure was complete.

In a case reported in *Commentarii di Medicina e Chirurgia* (*Gazzetta delle Cliniche*, September 22), Dr. SCARENZIO had nearly succeeded in healing an ulcer by skin-grafting. As perfect healing, however, was retarded, apparently by the presence of varicose veins, he injected into these half a grain of chloral dissolved in water. A coagulum was formed; and in a few days the ulcer was completely healed.—*London Med. Record*, Nov. 18, 1874.

44. *Multiple Neuroma cured by Division of a Nerve Trunk.*—Prof. KOSINSKI, of Warsaw, relates the following case of this:—

A. B., æt. 30, had painful knotty tumours in the lower extremity, which he said were small and painless when he first noticed them, but afterwards, whilst he was performing long military marches, they increased in size and became painful.

On the upper and outer surfaces of the thigh, as low as its lower third and over part of the buttock, were scattered small, hard masses, round or oval in shape, and varying in size from a pin's head to a hazel-nut. They were apparently situated in the corium, and felt hard for the most part; but the larger ones were elastic, semi-transparent, and more clearly defined, and appeared more closely connected with the skin, which round them was dry, rough, and desquamating. Pressure on the tumours, but especially the larger ones, caused intense pain, radiating in all directions. Scarcely any was felt when the limb was kept completely at rest.

To determine the nature of the tumours, which seemed to be of the connective tissue type, one of the most painful was removed with the patient's consent. Microscopic examination showed that it consisted of gray nerve fibres mixed with fibrous tissue, indicating the probable origin in the cutaneous extremities of a nerve, and from the position of the tumours the nerves affected were obviously the small sciatic and part of the external cutaneous.

The orthodox drugs—mercury, iodine, and preparations of sulphur—were completely powerless. There seemed no possibility of removing them by the knife or cautery, and so Professor Kosinski determined upon excising a piece of the nerve, as near as possible to its origin, with the view of rendering the tumour painless, but without any expectation of diminishing their size. By an oblique incision, almost in the direction of the gluteal fold, the small sciatic nerve was reached, and a portion of it, an inch long, was removed, as far as possible under the edge of the gluteus maximus. The oblique incision was preferred to a perpendicular one, as it made the discovery of the nerve much more simple.

The immediate effect of the operation was the loss of sensibility in the tumours themselves, as well as in the whole region occupied by them. A few of them, however, on the anterior and outer parts of the thigh and in the sciatic region, had their sensibility only partially destroyed. Whilst the wound was granulating they began to dwindle: and so rapidly did this take place that at the end of the few weeks that the patient remained under inspection the larger ones had been reduced by a half and the smaller ones had almost completely disappeared. In this state he left the hospital, and Professor Kosinski was informed by the physician under whose care he afterwards came that at the end of four months the process of disappearance was still going on, and that those which remained had become completely painless.

In concluding, he remarks that the case is interesting in many ways—first, the diagnosis could only be made with certainty by a microscopical examination; secondly, division of a nerve in this class of cases is, he believes, hitherto undescribed; thirdly, the result of the operation exceeded all expectation. The rapid disappearance of the new growths is interesting in a physiological point of view as indicating the influence of the sensory nerves upon the nutrition of a part.—*Med. Times and Gaz.*, Nov. 14, from *Centralblatt für Chirurgie*, July 18, 1874.

45. *Extirpation of the Kidney; Recovery.*—At a meeting of the Medico-Chirurgical Society of Edinburgh (May 6, 1874), Dr. Matthews Duncan read a paper by Dr. A. C. CAMPBELL, of Dundee (*Edinburgh Medical Journal*, June, 1874), on a case of cystic tumour attached to kidney, simulating ovarian disease; extirpation of kidney; recovery. Mrs. S. 49, millworker, widow, noticed, eighteen months ago, swelling in the lower iliac fossa, which made rapid progress. When admitted it was freely movable, and larger than a man's head. Three fluctuating points, which apparently communicated, were felt. Uterus was high in the pelvis. Ovariectomy was determined on. An incision made five inches in length; peritoneum opened; cyst exposed. It was tapped by a large trocar, but no fluid came. It was found to be of consistence of porridge; no cyst was opened, and two pints of stuff cleared out. Ovaries were found perfectly healthy, and in normal situation. Tumour was found to be a cystic one, involving left kidney, which was removed, after adhesions to a portion of bowel and omentum were broken up, and vessels tied with catgut, and ureter tied. The patient made a tedious but complete recovery, during which she passed about forty ounces of urine daily, healthy and without albumen. It is stated that this paper will appear *in extenso* in a subsequent number of the *Edinburgh Journal*, but up to the present time has not done so.

For a record of the other reported cases of extirpation of the kidney, the reader is referred to the numbers of this *Journal* for January, 1873, page 277, and July, 1874, page 266.

OPHTHALMOLOGY.

46. *Decoction of Ipecacuanha as a Collyrium in Subacute Inflammation of the Conjunctiva.*—Dr. N. GUÉNEAU DE MUSSY states (*Practitioner*, Sept. 1874), that, from observing the beneficial effects of the decoction of ipecacuanha in subacute inflammation of the bowels, he was led to try it in a similar condition of other mucous membranes. He relates a case of ophthalmia neonatorum treated by him at the Hôtel-Dieu, in which the acute symptoms were relieved by his usual mode of treatment with a solution of nitrate of silver, but the inflammatory process was not quite extinguished. "The conjunctiva remained swollen, red, and slightly granulated. The cornea presented the same appearance. I touched it with a crayon composed of equal proportions of nitrate of potash and nitrate of silver. But no change took place in the condition of the affected parts. The ulceration and the opacity of both corneæ remained unmodified.

"After four days of useless applications of this remedy, it occurred to my mind that decoction of ipecacuanha, which had proved so useful in subacute inflammation of the bowels, might be successful in this case.

"So I prescribed four times daily an instillation to be made into both eyes with the following decoction: Ipecac. root, ʒss; water, ʒv. Boiled for ten minutes, and when cool, strained off.

"The application of this topic seemed at first rather painful; the child winked, frowned, and cried after each installation. But it soon got accustomed to them, and the affected parts were speedily modified. After twelve days the granular appearance had disappeared; the conjunctiva recovered its natural color; the right cornea was quite healthy; only slight opacity was to be observed in the left; and after some days the baby left the Hôtel-Dieu entirely cured.

"I related this observation to my learned friend Dr. Galezowsky, who tried the remedy in the same conditions of *subacute* inflammation, and in several cases with success."

47. *Conical Cornea successfully treated by Operation.*—Dr. JOHN A. NUNNELEY, of Leeds, after referring to the various operations which have been employed for the relief of conical cornea, relates (*Brit. Med. Journ.*, Nov. 7, 1874) a case in which he successfully operated, by removing an elliptical portion from the most prominent part of the cornea. The subject of the case was a girl, æt. 17; health, aspects, and habits good; dates the commencement of her disease from attack of scarlet fever four years previously. The cornea of the left eye was extremely conical, the apex of the cone being abraded and slightly opaque. The cornea of the right eye was also markedly conical, but to a somewhat less extent.

On May 18th, the following operation was performed on the left eye, under chloroform. Two very fine curved needles, threaded with very fine silk, were inserted through the most prominent part of the cone, but not drawn through. In front of these needles, a small elliptical piece of cornea was removed by a long fine Von Graefe's knife and forceps. The needles were then drawn through, and the edges of the wound of the cornea thus made were brought together as accurately as possible. The lids were securely closed, and gentle pressure kept up outside; the patient was kept in bed.

19th. She had little or no pain.

21st. The anterior chamber had nearly refilled; there was very little inflammation.

22d. Under chloroform, the stitches were removed. The corneal wound was perfectly healed, and the anterior chamber entirely refilled.

25th. She was allowed to get up.

31st. With the left eye she could read No. 16 Jäger, while previously she could only distinguish quite large objects. She was made an out-patient. She was readmitted on June 29th, 1873.

July 4. The same operation was performed on the right eye.

26th. She could read No. 10 (Jäger) without glasses, and the sight was not improved by either concave or convex (spherical) glasses.

August 23. She could read without glasses, with the right eye, No. 10; with the left eye, No. 6. With concave cylindrical lenses, and with the right eye $-2\frac{1}{2}$, the axis of cylindrical curvature being perpendicular, she read easily No. 4 (Jäger); with the left eye, with $-5\frac{1}{2}$, the axis being placed horizontally, she read No. 3.

Dr. N. remarks: "I am aware that the use of stitches, as in the above case, has by some surgeons been thought unnecessary; after, however, operating several times with and without them, I am satisfied that the risks are lessened, and that the best results have been obtained in these cases, where the plan above described has been followed, because the needles prevent much of the risk to the parts beneath the cornea during the operation, or any injury being done by the removal of the support of the cornea; but especially the edges of the wound being brought together, it much sooner heals, and a single line of cicatrix is left, the opacity of which disappears in many cases almost entirely."

48. *Enucleation of Eyeball, with fatal Result.*—Dr. JUST, of Zittau, records a case of death following enucleation. The patient, a man of 63, had his *left* eye struck by a piece of stone about three months previous to coming under observation. Suppurative inflammation followed, leading to atrophy of the globe and complete loss of sight. The *right* eye had become affected with sympathetic irido-cyclitis. Under these circumstances enucleation of the left eye was performed. Healing went on favourably, though attended with rather more purulent discharge than usual, until the tenth day, when the patient complained of pain in the head, became confused in his speech, in a few hours became comatose, the pulse and temperature rapidly rose, œdema of the lungs ensued, and death occurred forty-eight hours after the first appearance of head symptoms.—*Edinb. Med. Journ.*, June, 1874, from *Klin. Monatsbl. für Augenheilk.*, 1872.

49. *On Traumatic Rupture and Displacement of the Internal Rectus Muscle: its Replacement by a Double Suture.*—In the *Annales d'Oculistique* for May and June, 1874, M. WECKER reports an interesting case in which the internal rectus had been completely torn from its insertion to the eyeball, and had retracted so as to cause a divergent strabismus, and an annoying amount of diplopia.

The patient, a man aged forty two, had fallen with his face upon the handle of some kind of beer-tap, and had received a contused wound at the inner angle of the eye, by which the internal rectus had been torn through. The consequences were a divergent squint of 3''' or 4''', and a distressing amount of crossed diplopia. Some time after the accident, and when the parts were soundly healed, M. Wecker replaced the detached muscle by sutures, and was fortunate enough to obtain a complete cure.

The scar in the conjunctiva was firm, and required very careful dissection from the eyeball; the muscle was exposed and brought forward, and then attached to its old insertion by two threads which were made to cross each other before they were tied, a method of securing them which M. Wecker strongly recommends as calculated to insure thorough fixation with less strain upon the muscle itself. The result of the operation, which, though necessarily tedious and painful, was borne without chloroform, was the complete removal of the squint and cure of the diplopia.—*London Med. Record*, Sept. 30, 1874.

50. *Vertigo simulating Brain Disease induced by Strain of the Convergent Muscles of the Eyes.*—Mr. BRUDENELL CARTER communicated to the Clinical Society (Oct. 23) a most interesting and instructive case of this: the subject was a young gentleman who was interrupted, while reading for honours at Oxford, by double vision and vertigo, followed, when reading was continued or soon resumed, by sickness, palpitation, and intense headache. These symptoms were attributed to some obscure affection of the brain. The patient was directed to leave Oxford without taking a degree, remained for some time at home under medical treatment without improvement, and on coming to London for further advice, was told to take a voyage to Australia and back in order to

rest his brain. He did so, returned no better, and was then ordered not to enter into business and to abandon an engagement. Mr. Carter was consulted about the case, in order that he might say whether the ophthalmoscope revealed anything abnormal in the cerebral circulation. He found the patient very short-sighted, but he had never worn spectacles. In reading, he held his book seven inches from his eyes, and Mr. Carter ascribed the symptoms to inability to maintain this degree of convergence for many hours. He ordered spectacles to be worn constantly, and reading to be practised at eighteen inches distant. In three weeks the patient returned cured, with his wedding-day fixed, and his arrangements for entering into business completed. In concluding, Mr. Carter said that the case, though exceptional, was exceptional only in degree, and that many patients suffered from headaches and other symptoms due only to impaired harmony of the ocular muscles, or to inordinate exertion of some of them. He urged that in every case of obscure affection the state of refraction of vision and of the muscles should be ascertained—at all events before a patient was sent to Australia or advised to abandon his position and duties in life.—*Lancet*, Oct. 31, 1874.

MIDWIFERY AND GYNÆCOLOGY.

51. *Occipito-posterior Positions of the Head*.—Dr ANGUS MACDONALD has contributed to the *Edinb. Med. Journal* (Oct. 1874) "observations upon the nature and treatment of difficult occipito-posterior positions of the head, founded upon an analysis of twenty-six operative cases." The following are the chief practical points he endeavours to maintain:—

1. In occipito-posterior positions, if these are persistent, we may safely assume that we have some pelvic peculiarity or disproportionately large head to deal with, and, as a general rule, all attempts at artificial rectification of the position of the head will prove abortive, and are even dangerous if attempted to be effected by means of levers, forceps, etc.

2. The only exception is when temporary delay is occasioned from accidental displacement of a small head; in which case one has the alternative of waiting till the normal powers of parturition effect delivery, or of facilitating that event by timely rectification of the head by the hand.

3. In cases which threaten to end as "face to pubes," and are at the same time decidedly difficult, it is best to pull the head through cautiously, and to abstain from every attempt at rectification of the head—special care being taken to guard the perineum, as the occiput, when passing over it, greatly distends it.

4. In cases of obstructed occipito-posterior positions in which the rotation takes place at the outlet of the bony pelvis, while the head is in the grasp of the curved forceps, there is very great danger, in the case of primiparæ, of the forceps lacerating the soft parts, on account of the oblique position into which they are thrown.

5. To prevent this accident, either, 1st, the blades ought to be cautiously removed, the head fixed in position, and the uterus allowed to finish the expulsion of the head; or, 2d, the curved instruments may be reapplied, adjusted to the altered relation of parts; or, 3d, a straight short pair may be applied, and the further advance of the head thereby secured.

52. *Sulphate of Quinia as an Abortifacient and Oxytocic*.—Dr. CHIARI has given quinia to forty patients in the Royal Catherine Institution of Milan, and has come to the following conclusions as to its effects in such cases:—

(1) The disulphate of quinia has no action as an abortifacient.

(2) Quinia cannot be trusted, either alone or in conjunction with mechanical means, for the induction of premature labour.

(3) In cases of slow, suspended, or irregular labour, it is not well to trust to the action of quinia.

(4) The assertion of Ponti, of Parma, that ergot must give way to quinia, is chimerical, at least as regards midwifery.

(5) When quinia is indicated by the presence of general morbid conditions during pregnancy, it should be given, not only as a remedy for the disease, but also as the best means of preventing abortion or premature labour.

(6) Quinia has no power whatever in preventing or modifying morbid conditions of the puerperal state, whether of infectious or of sporadic origin.—*Brit. and Foreign Med.-Chir. Review*, Oct. 1874, from *Gazzetta della Cliniche*, No. 29, 1873.

53. *On the Tensile Strength of the fresh Mature Fœtus*.—Dr. J. MATTHEWS DUNCAN read a paper on this subject at the late meeting of the British Medical Association. (*British Med. Journal*, Sept. 19, 1874.)

He began by pointing out the great need for extended series of laboratory experiments to verify or discover new rules in obstetrics. In the present paper, he showed, by a series of simple experiments, the limit of the force that could be exerted in dragging a fœtus through a contracted pelvis. He pointed out that this force was less than would naturally occur to most men guessing on the subject, and referred to the absurdly erroneous statements often made by our best authors as to the greatness of this available force. A series of experiments performed by the author went to show that an average traction-force of 120 pounds, which was far greater than any natural expulsive force, caused decapitation, the spinal column giving way between the fourth and fifth cervical vertebrae. It was difficult to employ an extractive force of one hundred weight by ordinary means. Dr. Steele observed that, although many practical conclusions might be drawn from carefully conducted experiments, still the force employed was not comparable with the traction-force in ordinary delivery. The force was differently exerted; it was not so continuous and not so thorough. There was considerable difference in practice in estimating whether there was a greater tolerance of extracting force by the feet or by the forceps. In some cases he was led to prefer podalic extraction; in others, it was safer to employ powerful forceps and considerable extractive force. Dr. Robert Barnes thought that, although the tensile power required to decapitate a dead child was found to be 120 pounds, still, when we tried to carry it on to podalic version and delivery, it was different. The living fœtus would bear a tractile power that the dead child would not; the living body would resist a power sufficient to separate a dead child. The forceps was not comparable with podalic version. It was justifiable to make experiments in tractile force, though there would be little hope of delivering a child alive. He demurred to the statement, that no accoucheur could apply a tractile force of 100 pounds. The average weight of the operator's body being taken at 140 pounds, it could all be utilized. He admitted that a less force would succeed in delivering a child that would live a few minutes and then die; but this he regarded as a failure of the operation. The experiments of Dr. Matthews Duncan differed from those performed by himself (Dr. Barnes). If turning were resorted to, the child should be capable of coming through the pelvis. In Dr. Duncan's experiments, the hole would not admit of the head passing; so the case was not fit for turning, and, therefore, not applicable. The force might still be too great; but, if applied in the proper direction, the head might be brought through the pelvis. Fœtal heads varied considerably. Some were plastic, and in that element of uncertainty lay the scope for experiments. He did not wish to underrate the value of Dr. Duncan's experiments, but still he differed from the author as regards their utility. Dr. Braxton Hicks bore testimony to the great debt owed to Dr. Duncan for his experiments. The practical point was, what amount of force was necessary to reduce the biparietal diameter of the fœtal head to allow it to pass, and bring it down to the diameter of the base of the skull. Craniotomy and death of the fœtus was the other alternative. In one case, he had witnessed traction exerted until a distinct snap was heard, as if the neck had broken, and yet the child was born alive and lived. Dr. Steele had also experienced this in his practice. Dr. Drury had met with a similar case, where the forceps had been applied and a distinct crack heard, and yet the child was

born alive. The question was, whether it was due to the head impinging on the pelvic bones. Dr. Matthews Duncan remarked that he had not said a word in favour of or against podalic version or forceps, but had pointed out certain points which must be decided. The strength of the materials must first be known. The vertebral column gave way before the soft parts, and 15 pounds extra could be put on after the spinal column had given way. As a rule, 100 pounds of traction must not be used, or decapitation would be the result. The question had been raised whether a living body would bear more force than a dead one. He thought that a fresh fœtus was as strong as a living one. Casper said that the dead body was far stronger than the living; but it was wrong; there was no difference as long as the body was fresh. Nothing erroneous had been pointed out in his paper. There was much difference in the force employed. A child might be torn to pieces if more than a certain force were applied. Two or three people might swing with the forceps on the fœtus; but, if the feet were grasped, one was sufficient to tear it asunder. The deformity of the head made a great difference; it was a question of fireside opinions *versus* bedside opinions. Experiments on the dead fœtus threw much light on the subject.

54. *A Source of Puerperal Fever.*—M. CHAUFFORD, in the course of a debate at the meeting of the *Société Médicale des Hôpitaux* (Oct. 9, 1874), asserted that every suppuration, every disease which produced morbid discharges, if in the vicinity of women in childbed, would give rise in the latter to puerperal fever. Thus he explained the great mortality of women in wards where they are in contact with nurses and children under two years of age. In his service at Neckar Hospital M. C. has for a long time remarked that this proximity is most pernicious; that when he opens an abscess in the bosom of the nurses, or when he observes infants affected with purulent ophthalmia or erysipelas, he is sure to find in a short time puerperal troubles of greater or less severity.

M. C. called the attention of the administration to this dangerous condition for puerperal women, and to the necessity for their absolute isolation.—*Gazette Hebdom.*, Oct. 16, 1874.

55. *Hydrate of Chloral in Puerperal Eclampsia.*—M. FANNY, in a thesis published in 1874 (*Revue des Sciences Médicales*, July), records several cases of puerperal eclampsia treated by chloral. The patients were admitted into the maternity wards of the Charité and Cochin Hospitals. Hydrate of chloral was administered both internally by hypodermic injection, and was introduced into the stomach and rectum. In one case a subcutaneous injection of hydrate of chloral was given by means of a large Pravaz's syringe. Five hypodermic injections were given to this patient without any ill consequences to the subcutaneous cellular tissue.

The two following statistical statements are extracted from M. FANNY's thesis:—

1. Chloral given after other preliminary treatment, bleeding, leeches, purgatives, revulsives, anæsthetics, etc.; women treated 16, cured 14, died 2.

2. Chloral given alone: women treated 20; lost sight of 1, cured 19.

The results obtained by the use of this agent are, therefore, very encouraging, and M. Fanny believes himself authorized to draw the following conclusions: Hydrate of chloral affords, at the present time, the best treatment for puerperal eclampsia. It is indicated not only when the attacks openly declare themselves, but also when any symptoms suggest coming trouble.

Dr. CHARRIER's case, published in the *Annales de Gynécologie* for Jan. 1874, is also strongly in favour of the use of chloral in puerperal eclampsia.

A young woman, the daughter of neuropathic parents, suffered two attacks of puerperal eclampsia, in the middle of the ninth month of her pregnancy. Two injections, each containing four grammes of chloral, were given to her. On the occasion of a third, but slight attack, a third injection of two grammes of chloral was administered. Dr. Charrier induced premature labour by dilating the os uteri by means of India-rubber bags filled with tepid water. The mother and child were in good health when this case was published. The child, when

two months old, had three eclamptiform convulsive attacks; four small teaspoonfuls of syrup of chloral were given, and the attacks never reappeared.—*London Medical Record*, Oct. 28, 1874.

56. *Tow Pessary*.—Dr. EDWARD COPEMAN says (*Brit. Med. Journ.*, Oct. 24, 1874) he is inclined to the belief that a tow pessary might, in many cases, be used with success, and it has the merit of being incapable of doing injury to the parts with which it is in contact. It is easy of introduction; indeed, his patient soon learned to introduce it for herself. Being a compressible material, the tow would not keep the vaginal walls constantly on the stretch, like a solid body, but would rather allow them to contract gradually upon it, and thus prevent their losing their resilient power. The linen with which it is covered at the top and sides affords an easy means of withdrawing the tow for purposes of cleanliness, and the pressure which the tow exercises on the soft parts is equable, and so distributed that it causes no pain in any part with which it is in contact. Moreover, it is not liable to be displaced by any pressure or weight exerted upon it by the uterus itself or by muscular efforts in defecation, for it clings, as it were, to the walls of the vagina; and this, combined with the resistance of the sphincter, effectually prevents it from being displaced. I am very sanguine in the opinion that a *tow pessary* will be found useful in various cases where pessaries are usually employed; but, at all events, I feel sure it will be found a most serviceable and effective means of removing the difficulties and annoyances of a *complete prolapsus of the uterus*.

Dr. C. states that he chanced one day to be in the Norfolk and Norwich Hospital when Dr. Crosse examined a patient with prolapsus uteri, "and he asked me whether I thought an operation he contemplated would be likely to afford relief. The uterus was quite extruded, and, when he returned it into the vagina, the folds of the vagina were so loose and redundant, that he proposed removing a considerable portion on each side, in the hope that, in healing, it might afford effectual support to the uterus and prevent its further extrusion. The matter was left open for further consideration; but I suggested meanwhile that he should reduce the uterus and plug the vagina with some tow which was lying at hand, covered at the top by, and partially inclosed in, a piece of linen greased on the outside to facilitate its introduction. This was effectually done, and, although nearly half a roll of tow was used, it produced no inconvenience either to the bladder or the bowel. It maintained the uterus in its place, and was renewed as often as appeared necessary for cleanliness. Soon the patient was enabled to renew it herself; and, after a week or two, she was discharged from the hospital and advised to continue the same plan. I heard of her some time afterwards, and ascertained that the uterus never came down now, and that she could even dispense with the tow pessary, except when over the wash-tub, at which times she *thought it prudent* to apply it. She had not been so well for years."

57. *Gastro-hysterotomy*.—Dr. GRANDESSO SILVESTRI believes that by the use of the metallic suture in cases of gastro-hysterotomy, union by the first intention of the incision in the uterus may be effected, and suppuration of the wound and the serious effects of suppuration and effusion into the perineum thus be prevented.

In one case in which he employed these sutures the case resulted favourably both for mother and child.

In a second one the result was not so favourable, the patient dying thirty hours after the operation; but the autopsy showed that union by the first intention had been accomplished.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Amputation at the Hip-Joint for Malignant Disease of the Femur ; Recovery ; Subsequent Death. By JAMES B. MURFREE, A.M., M.D., of Murfreesboro, Tenn.

In order to contribute to the statistical record of hip-joint amputations, the following case is reported :—

Ambrose T. G., aged 15½ years, residing in Cannon County, Tennessee. Until within the last eight months had been stout and healthy. Parents both living and healthy, except that the father is debilitated from repeated attacks of intermittent fever and has now a very small epithelial cancer on his face. An aunt on the father's side died from a cancer of the face.

In June, 1871, the boy received a blow on the left thigh, just above the knee, which gave him some pain, and was followed by very great soreness and slight swelling of the parts. Stimulating embrocations were used, but the limb continued painful and the swelling constantly increased. The swelling extended upwards, and soon involved the whole of the thigh. The pain became very intense, and after a few months the pain and swelling were so great that locomotion was impossible. I saw him for the first time April 4th, 1872. At that time he was entirely confined to his bed, lying all the time on his back, greatly emaciated ; his thigh very much enlarged, and so very painful that he could not be moved. There was a very decided enlargement of the femur, from the condyles to the great trochanter, and on pressure it yielded a hard, bony feeling. At the middle third, slight mobility was detected, as though the bone had softened at that point. The thigh at its middle measured twenty-five inches in circumference.

When the limb was kept at perfect rest, there was but little pain, but any attempt to move it threw him into perfect agony of pain.

His appetite was good, but he continued to waste, and lost flesh every day. His digestion was perfect, and his bowels were regularly discharged.

Upon consultation with Drs. Thos. Knight, G. W. Crosthwaite, and H. M. Hearn, of Statesville, Wilson County, and Dr. H. J. Maney, of Auburn, Cannon County, it was unanimously concluded to amputate at the hip-joint, as it alone would afford him any hope of recovery. In his condition at that time, life was a burden, and without an operation death in a short time was inevitable. Grave apprehensions were expressed that the operation perhaps would prove fatal, yet possibly the patient might survive the shock and recover. Accordingly, with the assistance of the above-named gentlemen, I amputated at the hip-joint by antero-posterior flaps. Dr. Knight administered the chloroform, Dr. Crosthwaite compressed the femoral artery in its transit over the ramus of the pubes. Dr. Hearn supported the limb, while Dr. Maney stood ready to ligate the bleeding vessels.

The anterior flap was made first, by inserting the knife at a point midway between the trochanter major of the femur, and the anterior superior spinous process of the ilium, and coming out at the middle of the inner side of the thigh, just below the perineum, cutting downwards, close to the bone, making a flap about four inches in length. Here the operation was delayed to ligate some vessels which were bleeding profusely, after which disarticulation was attempted, but the bone was so softened that the knife readily sank into the neck of it, and by pressure was made to cut through it, when the posterior flap was made, the limb removed, and afterwards the head separated from the socket.

The hemorrhage was very great, producing partial syncope, but the free use of restoratives soon brought about reaction, the bleeding vessels were quickly ligated, the wound temporarily closed, and the patient placed in bed.

An examination of the amputated limb left no doubt as to the malignancy of the disease. The bone was enormously enlarged and softened at different points; near its middle separation had taken place, and the medullary canal was filled with a purulent offensive matter.

After three hours, all oozing having ceased, the flaps were brought in apposition by the interrupted suture, and supported by adhesive strips, a compress was laid over the wound, and a bandage thrown around the stump.

The patient was left in a comfortable condition in the charge of Drs. Maney and Crosthwaite, who visited him regularly and made all the subsequent dressings.

On April 12th, eight days after the operation, I visited the patient, and found him doing remarkably well, suffering much less than before the operation was performed, and improved in strength. Wound suppurating freely, adhesion had taken place at several points; expresses himself as feeling a great deal better. From this date the patient continued to improve, the wound readily united, making a very good cicatrix. The patient fully recovered his strength, walked about on his crutches visiting the different neighbours, and frequently rode on horseback.

About four and a half months after the operation he received a fall, his whole weight coming upon the stump, and from that time he began to decline; had fever, and suffered from dyspnoea. There seemed to be a pressure upon his lungs, and the intercostal spaces were obliterated, and the respiration was confined to the upper lobes. The dyspnoea continued to increase, and became so great that he was unable to lie down; finally, on the 20th September, 1872, he died (of what Dr. Maney diagnosed to be intercostal cancer), having survived the operation five months and sixteen days.

Case of Twins, one blighted with excess of Amniotic Fluid. By H. C. MARKHAM, M.D., of Winthrop, Ind.

May 2, 1874, I was called to attend a healthy, robust woman, in the second stage of labour with her fourth child. The pains were strong and regular. The membranes were found much stronger and thicker than usual, and the sufferings of the patient from dyspnoea were so great that, to facilitate delivery, I punctured the membranes in the usual way. Immediately after there was a strong contraction, which expelled a healthy good-sized child, accompanied with a discharge of amniotic fluid which was little short of a deluge. After saturating the bed, the floor of the room became flooded, and some escaped below into the cellar. A brief interval

was followed by a pain which brought down a second perfect fœtus of six months' growth, which was expelled in its own sac, which was entire. The fœtus was of marble whiteness, and its firmness of tissue fully equalled its more fortunate full-grown mate.

This case suggests some queries relative to the pathology of the coexistent excess of amniotic fluid and blighted uterine life. Dr. Barnes, of London, remarks this connection as being very frequent.

Case of Intestinal Malformation. By F. A. SEYMOUR, M.D., Jeffersonville, Indiana.

May 23, 1874, the writer successfully operated in a case of congenital imperforate anus, with imperforate rectum passing transversely from right to left, and terminating on the left side of the pelvic cavity, to which it was supposed to be bound down by adhesions.

Subsequent to the operation, for some weeks the child seemed to thrive and to have an increasing control over the fecal evacuations; discharging the urine through the urethra as he had done from his birth.

When he was five weeks old, my attention was called to the fact that for some time immediately previous the babe had not passed his urine per viam naturalem, but that he had occasional clear watery discharges per rectum, which, the nurse said, had a urinous odour. I did not see the patient, but sent directions to have the evacuations closely watched, and, should the statement of the nurse prove correct, to inform the family physician, who, in the event of the necessity for further surgical interference, would notify me.

These rectal urinary discharges ceased almost entirely within a few days, the urethra performing its proper office.

The excretions were normal as to quality, quantity, and frequency, the feces being a little more consistent than is usual with infants. I heard no more from the case until September 15, 1874, nearly four months after the operation, when I was summoned to hold an autopsy, the child having died the previous night. On inquiry, I learned that for two months or more he had been wasting away, the abdomen meanwhile becoming prominent and tympanitic. Appetite had continued good, digestion unimpaired, excretions normal.

There had been no flatulence, no indications of rigor or fever, and manifestations of suffering were noticeable but a few hours before death.

Autopsy.—The body was extremely emaciated; the abdomen tumid, and of a purplish hue. The artificial anus was somewhat contracted, but not perceptibly abnormal.

The abdominal cavity alone was examined. The liver, spleen, pancreas, and kidneys were normal in size, structure, and position. Stomach small, but normal; duodenum and jejunum entirely normal; ileum of normal diameter and length; its convolutions occupied their proper space in the umbilical and hypogastric regions, but instead of passing over to the right iliac fossa, the direction of the intestine was reversed. In the left iliac fossa, the ileum turned back upon itself; ascending, it passed over and in front of the spleen, terminating near the cardiac extremity of the stomach, in an *enormously distended cæcum* with unusually thin walls—the appendix vermiformis resting on the spleen. The colon of equal diameter with the cæcum passed thence transversely into the right hypochondrium, thence downwards into the right iliac fossa, where it suddenly diminished in size and assumed in every respect but location the appearance of a

normal ileum. This portion of intestine, making a few convolutions, passed obliquely upwards and to the left, across the spinal column as high as the left kidney, thence descending rather abruptly, recrossed the spinal column, descending without convolutions into the right iliac fossa, thence passing transversely across the pelvis, terminating, not in a fixed cul-de-sac as originally supposed, but in the bladder, by a minute orifice at its posterior part, and immediately above the vesical sphincter. This opening in the bladder was covered by a longitudinal fold of mucous membrane; in the rectum it was unprotected.

With the exception of the rectal connection, the bladder was normal, its lining showing not so much as a feculent stain. The artificial anus had been made transversely across the rectum, about an inch from its termination.

DOMESTIC SUMMARY.

Subcutaneous Injection of Strychnia in Amaurosis and Amblyopia.—Dr. HASKET DERBY extols (*Boston Med. and Surg. Journal*, Nov. 5) the efficacy of subcutaneous injection of strychnia in certain cases of amaurosis and amblyopia. He has found it particularly useful in cases of "amblyopia ex abusu." "It has for some time," he says, "been known that the long-continued, excessive use of alcohol or tobacco sometimes gives rise to a peculiar affection of vision. Its acuteness slowly and regularly diminishes. There is no contraction of the visual field, no break in its continuity, but distant and near objects grow gradually indistinct, the patient often using the expression that everything about him is enveloped in a gradually thickening mist. Glasses are found of no avail for distant objects, though convex lenses for a time sustain the failing powers of the eye for the near. But reading and writing finally become impossible. Ultimately, if the disease progresses, the patient is unable to guide himself about, and blindness may ensue. During all this time, there is no change in the external appearance of the eye. The ophthalmoscope alone reveals a change; at first, a degree of congestion of the optic nerve; towards the end, an atrophic degeneration of the same.

This is the true "amblyopia potatorum," or, more properly, alcohol not being its only cause, "amblyopia ex abusu." I have had the curiosity to look through my own records, in order to ascertain the comparative frequency of its occurrence. It occurred 52 times among 6602 patients, about .8 per cent. In hospital practice, I am satisfied it occurs more frequently. Of my 52 cases, 16 proceeded from the abuse of tobacco alone, 5 from that of alcohol, 31 from both combined.

Those who have treated these cases previous to the introduction of strychnia injections will all agree as to the slowness with which improvement takes place. It is true that rigid abstinence from the use of the exciting cause, and the employment of tonics will generally arrest the progress of the affection. But gain is excessively slow, frequently, for months, almost imperceptible.

Condition of the Uterus Five Weeks after Delivery.—Dr. WM. F. JENKS, one of the Surgeons to the State Hospital for Women, has lately had the opportunity of examining the uterus five weeks after delivery and he has given (*American Supplement to the Obstetrical Journal*, Nov. 1874) an account of his investigations.

He states: "I have been led to coincide with the opinion now held by some of the best histologists, that the reproduction is effected through the medium of the connective tissue cell in a way with which we are familiar from the study of the process of repair in other organs, viz., by their proliferation and division, forming thereby indifferent or embryonic cells, which subsequently develop into

the unstriped muscular fibre. I have been led to this conclusion from the fact that I can find no evidence of the division of the nucleus of the fatty degenerated muscular cell, while it is contrary to the laws of reproduction to suppose that a cell, itself undergoing death by molecular fatty degeneration, should manifest the highest attribute of life, viz., the production of a new cell endowed with all the marvellous attributes of vitality. In studying the process of fatty degeneration in other organs, we find that the nucleus, although retaining its function and form longer than the protoplasm, does itself in turn succumb, and finally is converted into fatty molecules, which may subsequently be absorbed. The parenchyma of the uterus submitted to me for examination was, however, infiltrated with small round young cells, such as we meet with in the repair of every tissue after injury, to which the name of embryonic or indifferent cells has been given, because they are impressed with the type of the tissue in which they are generated, and are capable, like the cells which we find in the germinal mass or vitelline sphere in the embryo, of development into muscular nervous or osseous tissue. On examining the external muscular layers of the organ, the remains of the old hypertrophied muscular fibre were evident, the individual cells, however, were much diminished in size and filled with fatty granules; but nowhere else in the uterus was there a trace to be found of the former muscular structure; hence the inference is rendered probable that the process of rejuvenation proceeds from within outwards, and approaches completion at or near the fifth week after parturition, and this opinion coincides nearly with that of Heschel, who states that the fatty degeneration and absorption of the old muscular structure is not completed before, nor does it continue after the eighth week. Priestly, in his treatise on the 'Gravid Uterus,' writes that the colossal muscular fibres are not found after the third week, the middle coat now consisting of embryonic cells."

"My attention," he adds, "has been especially directed to this microscopic examination, from the fact that at present the dietetic management of the puerperal state is a question which is being earnestly discussed. I cannot but believe that, during the time when this active process of involution is taking place, not only in the uterus, but also in the walls of the vagina, and the ligaments which aid in supporting the womb, while the organ itself is greatly increased in weight with diminished tonicities, a rest in bed for ten days or two weeks, and subsequently a careful return to any active exercise, is plainly indicated. In this opinion I am the more convinced from the fact that in a dispensary practice, where the patients are drawn from the poorer class in society, unable or unwilling to submit to restraint after confinement, by far the commonest form of uterine disease is subinvolution of the uterus after delivery or abortion, with its attending ills of displacements, and chronic catarrhal conditions of the mucous membrane.

"These are essentially chronic conditions, slowly developed, depending for their existence on structural changes in the tissues, or rather on the *arrest* of certain changes which, physiologically, should take place, which are not, however, normally completed until the expiration of a month or more after delivery. Therefore, in estimating the value of any mode of treatment of the puerperal woman, her condition, six months or a year after her confinement, must be the criterion, and not her general health a month after delivery. Even if this condition of subinvolution exists, the physical signs and symptoms are manifested only when the enlarged and indolent organ, engorged in consequence of a sluggish circulation—which is in part due to the implication of the muscular tissues of the bloodvessels in this arrested repair—sinks deeper into the cavity of the pelvis. The uterus usually becomes retroverted as it descends, inasmuch as it does not receive the proper support from the relaxed ligaments, vaginal walls, and perineal body, while the mucous membrane, owing to the passive congestion of the bloodvessel system, passes into a state of chronic catarrh, and the accompanying disturbances, both local and sympathetic, from this enlargement, structural change, and displacement of the organ, slowly but surely develop themselves at a later period."

Combined Administration of Chloral, Morphia, and Atropia.—Dr. ROBERTS BARTHOLOW, of Cincinnati, read (October 19) before the New York Society of Neurology and Electrology a paper on this subject. The following is a condensed summary of the results obtained from the simultaneous administration of these three articles.

Chloral differs from morphia, when injected subcutaneously, in the more decided systemic effects and the less local impression on the sentient nerves. As regards the systemic effects, the action of chloral is very much the same when administered hypodermically as by the stomach. The chief danger is an arrest of the respiratory movements. Chloral does not exert any chemical action on atropia when the two are held in solution together, for dilatation of the pupil of a cat takes place when the combined solution is instilled into the eye. Dilatation of the pupil also happens when they are administered hypodermically together. An apparent antagonism is observed as regards their action on the heart when the solutions of chloral and atropia are placed in contact with the heart of a frog when in position in the chest, after division of the medulla, or when the heart is removed. The action of the heart is further found to continue much longer when a lethal dose of chloral is administered together with atropia. In rabbits the same result is produced by the conjoined administration of the two agents.

Atropia is found to prolong the chloral narcosis several hours in rabbits, and diminishes the sensibility to pain. In man the excitant action of atropia hinders the occurrence of the chloral narcosis, but rather deepens the sopor when it at last supervenes. The effects of atropia last much longer, and are, apparently, in no way prevented by chloral.

Morphia deepens in every way the effects of chloral. Dr. Bartholow found, in the course of some experiments on himself, that many of the unpleasant effects of morphia are modified, as regards the wakefulness caused by the latter, but are not modified as regards the subsequent nausea, vomiting, vertigo, and constipation. When the two agents are administered conjointly, a much less quantity of chloral is necessary in order to produce sleep.

These agents act much more happily when administered simultaneously. Chloral causes sleep, morphia relieves pain, and atropia prevents or lessens the depression in the respiratory and cardiac movements caused by the other two, whilst it contributes to their cerebral effects.

These physiological studies are confirmed by the therapeutical results. The combination of chloral, morphia, and atropia is adapted to those cases of *insomnia* caused by pain, or in which chloral and morphia alone merely increase the cerebral excitement, as in hypochondria, puerperal mania, etc. This combination is also indicated in cases of fatty and irritable heart.

When pain is to be relieved, chloral is not so serviceable alone as in combination with morphia and atropia. The local administration—that is, the insertion of the medicament at the site of pain—is more effective than the merely systemic impression. This is especially the case in *tic-douloureux*, sciatica, and coccydynia, which are much more effectively treated by injections practised into the neighbourhood of nerves which are the seat of pain. The combination of a local irritant and benumber with a systemic anodyne is more curative than either used singly.

In cases of *muscular spasm* the author of the paper had obtained excellent results from the combined use of chloral, morphia, and atropia, and he especially called attention to the efficacy of these agents in the cramps of cholera. Many cases of spasmodic asthma and hay-fever had been benefited by their conjoint administration.—*Med. Record*, Dec. 1, 1874.

Erysipelas treated with Sulphate of Quinia.—Dr. Y. R. LE MONNIER recommends (*New Orleans Med. and Surg. Journ.*, Nov. 1874) the sulphate of quinia, given in doses of two grains every hour, for the cure of erysipelas. He says he employed it, with advantage, in his wards at Charity Hospital, New Orleans, at a time when for five months the disease reigned epidemically, so that on many occasions he dared not use the knife. He has also used it as a *prophylactic*, and he quotes one case of fistule of the left nates, in which he

deemed it necessary to operate, and where he administered quinia as a prophylactic, two grains every two hours. This patient was for seventeen days in an infected locality. His wound, nevertheless, progressed satisfactorily, and he was discharged without having had erysipelas.

Influence of the Disulphate of Quinia over the Intra-cranial Circulation.—There being some difference of opinion in regard to the influence of quinia on the intra-cranial circulation, some maintaining that it increased, and others that it diminished, the amount of blood in the cerebral vessels, Dr. W. A. HAMMOND, of New York, determined to settle the question experimentally, and gives the following relation (*Psychological and Medico-Legal Journal*, Oct. 1874) of the mode of procedure:—

"I resolved to take quinia myself, and to have my friend, Dr. Roosa, whose abilities as an ophthalmologist and aurist are indisputable, examine the fundus of the eye and the tympanum before the ingestion of the quinia, and during the continuance of its effects.

"The experiment was made on the evening of May 7, and I subjoin his report in his own words:—

"Vision normal	.	.	.	.	.	= $\frac{20}{20}$
Refraction	.	.	.	.	.	emmetropic.
Pulse	.	.	.	.	.	90

"Ocular conjunctivæ white, decidedly free from hyperæmia. Palpebræ congested at outer and inner canthus. Has no tinnitus aurium. Membrana tympani entirely free from evidence of vessels. No congestion along handle of malleus.

"Ophthalmoscopic examination of both eyes reveals a remarkably clear optic papilla on both sides. Arteries and veins, vertical and horizontal vessels clearly cut, and whole papilla sharply defined, rather pale than congested.

"Took gr. x sulphate of quinia at 8.30 P. M. At 9 P. M. ocular conjunctiva is congested at outer and inner canthus. Palpebral conjunctiva markedly congested over whole surface. No change in optic papillæ or in drum-heads.

"9.15. Surface of optic papillæ pinkish; arterial vessels seem more distinct; no change in appearance of drum-heads; no tinnitus aurium.

"Head feels full; left ear rings; auricles burn; face is decidedly flushed; auricles red, especially lobe of right, where there is a localized congestion that is so marked as to resemble an ecchymosis. There is now a vessel along each malleus; optic papillæ are pinkish. Pulse 84, and fuller.

"10½ P. M. Right drum-head is very much injected along handle of malleus and upper margin. Left less so, but yet injected. Both papillæ very pink, left more so than right. Face flushed, eyes suffused, ocular conjunctiva decidedly congested. Slight headache; tinnitus in both ears.

"11. Redness of auricles diminishing, especially the circumscribed spot on the lobe of the left one: face still flushed; tinnitus continues; no headache; feels exhilarated. Drum-heads still injected along malleus; not more so, however, rather less; optic papillæ have a decidedly pinkish hue; no more lateral vessels seen, however; right is especially pink. Tinnitus still continues; vision normal.' No further observations were made."

The phenomena, Dr. Hammond justly observes, indicated cerebral hyperæmia, but he determined to decide the question with even greater certainty.

"I therefore trephined a medium-sized dog, and screwed a cephalo-hæmometer into the opening into the skull made by the trephine, so that the fluid in the glass tube stood at zero.

"I then introduced into the cellular tissue ten grains of sulphate of quinia, dissolved in water acidulated with sulphuric acid. This was done at 3½ o'clock P. M.

"At 3.35 the fluid had risen one degree on the scale (= $\frac{1}{10}$ inch). It continued to rise gradually but steadily, till at 4.10 it had passed over ten degrees (= 1 inch of the tube). At 4.30, one hour after the injection of the quinia, the fluid was at + 15°. It continued at this point till 5.10, when it began to fall, and at 8.15 was at zero. It remained stationary for over an hour, at no time falling to the minus division of the scale.

"The stage of excitement scarcely lasted fifteen minutes. It was succeeded by a state of sedation, during which the salivation was excessive, and the animal appeared very much as if under the influence of a full dose of alcohol. As the normal condition of the dog was regained, the fluid fell in the tube, and reached the zero almost simultaneously with the disappearance of the symptoms of intoxication.

"I repeated the experiment on different days with variable doses of quinia—from two grains to fifteen—in all four times, and invariably with the result of a steady rise of the fluid in the tube as the effect of the drug increased, and its fall to the zero as the influence wore off. At no time did the fluid reach a lower point than that at which it stood before the administration of the quinia.

"I think the several experiments detailed in this memoir show conclusively that the influence of the sulphate of quinia over the intra-cranial circulation is that of causing hyperæmia and congestion."

The result of these experiments accords, we should think, with the experience of practitioners. Every one, we presume, must have witnessed deafness result from large doses of quinia, and we have had under treatment cases of amaurosis, sometimes utterly irremediable, occasioned by the too free use of that drug.

Acute and Subacute Spinal Paralysis; Inflammation of the Kinesodic Tract of the Spinal Cord.—Dr. SEGUIN read an elaborate paper on this subject before the New York Academy of Medicine (November 5, 1874). The affection was not known to the profession until within a few years. Twenty-two cases were reviewed, which included five that had come under his own observation.

Duchenne recognized it first in 1847, and brought it before the profession in 1853. It is nearly identical with infantile spinal paralysis. After a careful examination of all the reported and personal cases, Dr. Seguin recapitulated the symptoms as mainly referable to three groups, viz., mobility, sensibility, and nutrition.

In some cases changes in respect to mobility appear suddenly, in others more slowly, and in the whole series of cases every modification was apparent. In some cases the paralysis was general, in others paraplegic, and in others speech was affected. The muscles of the neck, chest, abdomen, and sphincters of the anus, were not affected.

As regards sensibility, one-half of the cases gave evidence of anæsthesia. Morbid sensibility was an abundant and an early symptom. Another important symptom was subjective cold. In three cases there was a feeling of a constricting band. In one case wasting of the tongue. There was never a tendency to the formation of bed-sores. There was muscular atrophy, with loss of contractility under the influence of electricity.

The diagnosis mainly rests on the atrophy of the muscles, with a loss of contractility, and in all its symptoms closely resembles infantile paralysis.

The pathological anatomy of the disease shows a granular degeneration of the ganglionic cells of the anterior horns of the spinal cord. The posterior were normal. No lesion was apparent to the naked eye, but under the microscope some of the ganglionic cells of the anterior columns contain yellow pigment, others are changed in form, while others have disappeared.

Treatment.—In the early stages counter-irritation is indicated over the spine. In the chronic form galvanism should be used to cause contractility. When contractility is good, faradism may be used.—*New York Med. Journ.*, December, 1874.

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CONTRIBUTORS TO THIS VOLUME.

- JOHN ASHHURST, JR., M.D., *Surgeon to the Episcopal Hospital, Philadelphia.*
 SAMUEL ASHHURST, M.D., *Surgeon to the Episcopal Hospital, Philadelphia.*
 J. R. BARNETT, M.D., *of Neenah, Wisconsin.*
 BERNARD BARTOW, M.D., *Resident Physician, Buffalo General Hospital.*
 R. M. BERTOLET, M.D., *of Philadelphia.*
 JAMES BORDLEY, M.D., *of Centreville, Maryland.*
 D. WARREN BRICKELL, M.D., *Prof. of Obstetrics and Dis. of Women in Charity Hosp. Med. Coll., New Orleans.*
 CHARLES S. BULL, M.D., *Assist. Surgeon to New York Eye and Ear Infirmary.*
 C. H. BURNETT, M.D., *of Philadelphia.*
 SAMUEL C. BUSEY, M.D., *Physician to the Children's Hospital, Washington, D.C.*
 PETER A. CALLAN, M.D., *Assistant Surgeon to New York Eye and Ear Infirmary.*
 EDWARD H. CLARKE, M.D., *Late Prof. of Materia Medica in Harvard University.*
 P. S. CONNER, M.D., *Prof. of Surgical Anatomy in Medical College of Ohio.*
 WILLIAM C. COX, M.D., *of Norristown, Pennsylvania.*
 J. M. DA COSTA, M.D., *Prof. of Practice of Medicine in Jefferson Med. Coll., Phila.*
 WILLIAM H. DE WITT, M.D., *Assist. Phys. to Longview Asylum for the Insane, Ohio.*
 ROBERT T. EDES, M.D., *Assistant Professor of Materia Medica, Harvard University.*
 STUART ELDRIDGE, M.D., *Surgeon-in-Chief, Northern District of Japan, in charge Imperial School of Medicine at Hakodate, Japan.*
 HORACE Y. EVANS, M.D., *of Philadelphia.*
 WM. M. FINDLEY, M.D., *of Altoona, Pennsylvania.*
 R. H. FRITZ, M.D., *Assist. Prof. of Pathological Anatomy, Harvard University.*
 GEORGE C. HARLAN, M.D., *Surgeon to Wills (Ophthalmic) Hospital, Philadelphia.*
 ROBERT P. HARRIS, M.D., *of Philadelphia.*
 HENRY HARTSHORNE, M.D., *Prof. of Hygiene in University of Pennsylvania.*
 I. MINIS HAYS, M.D., *of Philadelphia.*
 JAMES H. HUTCHINSON, M.D., *Physician to the Pennsylvania Hospital, Phila.*
 B. J. D. IRWIN, M.D., *Surgeon and Brevet-Colonel U. S. Army.*
 E. L. KEYES, M.D., *Prof. of Dermatology in Bellevue Hospital Med. Coll., New York.*
 A. F. A. KING, M.D., *Physician to Providence Hospital, Washington, D. C.*
 FREDERICK D. LENTE, M.D., *of Cold Spring, N. Y.*
 H. C. MARKHAM, M.D., *of Winthrop, Indiana.*
 THOMAS M. MATHEWS, M.D., *of Mount Enterprise, Rush County, Texas.*
 JOHN R. McCLURG, M.D., *of West Chester, Pennsylvania.*
 J. AITKEN MEIGS, M.D., *Prof. of Institutes of Med. in Jefferson Med. Coll., Phila.*
 J. FORSYTH MEIGS, M.D., *Physician to the Pennsylvania Hospital, Philadelphia.*
 MIDDLETON MICHEL, M.D., *Prof. of Physiology and Histology in Med. Coll. of State of South Carolina.*
 S. WEIR MITCHELL, M.D., *Physician to Infirmary for Nervous Diseases, Philadelphia.*
 H. F. MONTGOMERY, M.D., *Attending Surgeon to Rochester City Hospital, N. Y.*
 THOMAS G. MORTON, M.D., *Surgeon to the Pennsylvania Hospital, Philadelphia.*
 JAMES B. MURFREE, M.D., *of Murfreesboro', Tennessee.*
 GEORGE A. MURSICK, M.D., *of Nyack, New York.*
 JOHN H. PACKARD, M.D., *Surgeon to the Episcopal Hospital, Philadelphia.*
 JOHN S. PARRY, M.D., *Attending Accoucheur to the Philadelphia Hospital.*
 THEOPHILUS PARVIN, M.D., *Late Prof. of Diseases of Women, Univ. of Louisville.*
 B. LINCOLN RAY, M.D., *of Philadelphia.*
 J. C. REEVE, M.D., *of Dayton, Ohio.*
 J. G. RICHARDSON, M.D., *Microscopist to the Pennsylvania Hospital, Philadelphia.*
 BEVERLY ROBINSON, M.D., *Surgeon to Manhattan Eye and Ear Hospital (Dep't of Throat), New York.*
 E. P. SALE, M.D., *of Aberdeen, Mississippi.*
 F. A. SEYMOUR, M.D., *of Jeffersonville, Indiana.*
 T. W. SIMMONS, M.D., *of Hagerstown, Maryland.*
 WHARTON SINKLER, M.D., *Physician to Infirmary for Nervous Diseases, Phila.*
 NATHAN R. SMITH, M.D., *Emeritus Professor of Surgery in University of Maryland.*
 C. ELLERY STEDMAN, M.D., *of Boston.*
 THOMAS C. STELLWAGEN, M.D., *Prof. of Operative Dentistry and Dental Path. in Philadelphia Dental College.*
 FREDERICK R. STURGIS, M.D., *Lecturer on Venereal Diseases in Med. Department of Univ. of City of New York.*
 R. W. TAYLOR, M.D., *Surgeon to New York Dispensary, Department of Venereal and Skin Diseases.*
 PHILIP A. WILHITE, M.D., *of Anderson C. H., South Carolina.*
 J. J. WOODWARD, M.D., *Assistant Surgeon U. S. Army.*

TO READERS AND CORRESPONDENTS.

The appearance in our preceding number of a case of Irideremia, which was *simultaneously* published in a contemporary, and the communication to us of several articles of which we find abstracts have appeared in other journals, renders it necessary for us again to call attention to our rule, which for a number of years has been invariably announced on this page, viz.:—

All communications intended for insertion in the Original Department of this Journal are only received for consideration with the distinct understanding that they are sent for publication to us alone, and that abstracts of them shall only appear elsewhere subsequently, with due credit to this Journal. Gentlemen favouring us with their communications are considered to be bound in honour to a strict observance of this understanding.

We must acknowledge the courtesy of the Secretaries of most of our Medical Societies in sending us copies of their Transactions; a few not having been received, it consequently has not been in our power to notice them.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent to the Editors.*

The following works have been received:—

Anleitung zur Klinische Untersuchung und Diagnose. Von Dr. Med. RICHARD HAGEN, Privatdocent an der Universität in Leipzig. Zweite Umgearbeitete, Verbeserte und Vermehrte Auflage. Leipzig: Veit & Co., 1874.

Ueber Dammverletzung und Dammschutz. Von R. OLSHAUSEN. Leipzig: Breitkoff und Härtel, 1872.

Saint Bartholomew's Hospital Reports. Edited by JAMES ANDREW, M.D., and THOMAS SMITH, F.R.C.S. Vol. X. London: Smith, Elder & Co., 1874.

Contributions to the Mechanism of Natural and Morbid Parturition, including that of Placenta Prævia. With an Appendix. By J. MATTHEWS DUNCAN, President of the Obstetrical Society. Edinburgh: Adam & Charles Black, 1875.

Clinical Report of the Rotunda Lying-in Hospital for the year ending 5th November, 1874. By GEORGE JOHNSTON, M.D. Dublin: Master, etc. 1875.

The Pathological Significance of Nematode Hæmatozoa. By T. R. LEWIS, M.B., Staff-Surgeon H. M. British Forces. Calcutta, 1874.

A Report of Microscopical and Physiological Researches into the Nature of the Agent or Agents producing Cholera. Second series. By T. R. LEWIS, M.B., and D. D. CUNNINGHAM, M.D., Surgeons H. M. British Med. Service. Calcutta, 1874.

The Diseases of the Stomach. Being the third edition of the "Diagnosis and Treatment of the Varieties of Dyspepsia." Revised and enlarged. By WILSON FOX, M.D., F.R.C.S. With illustrations. Philadelphia: Henry C. Lea, 1875.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. VON ZIEMESSEN, Prof. of Clin. Med. in Munich. Vol. II.—Acute Infectious Diseases. By Prof. THOMAS, of Leipzig; Dr. CURCHMAN, of Berlin; Dr. ZCELZER, of Berlin; Prof. HERTZ, of Amsterdam; and Prof. VON ZIEMESSEN, of Munich. ALBERT H. BUCK, M.D., Editor of American edition. New York: William Wood & Co., 1875.

On Functional Derangements of the Liver. By CHARLES MURCHISON, M.D., LL.D., F.R.S., etc. New York: William Wood & Co., 1875.

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THE
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ART. I.—*Statistical Account of the Cases of Amputation performed at the Pennsylvania Hospital from January 1, 1870, to January 1, 1875; with a General Summary of the Mortality following this Operation in that Institution for forty-five years.* By THOMAS G. MORTON, M.D., one of the Attending Surgeons.

IN the 22d, 26th, and 28th volumes of this Journal statistical tables of all of the capital amputations performed at the Pennsylvania Hospital were published by Dr. George W. Norris. In the Pennsylvania Hospital Reports for 1868, another table by the same author may be found with the statistics completed to 1860. The statistics for ten years, from 1860 to 1870, I published in the October number of this Journal for 1870. The following tables have been drawn up in a similar manner, and represent the statistics for the last five years, with the mortality following this operation during a period of forty-five years. I have also added some tables which are interesting in showing the mortality in the successive months of the years, the ages of the patients, and the mortality following each member amputated. All amputations performed within twenty-four hours after the occurrence of the accident are included in the class of immediate operations. During the ten years from 1860 to 1870 a very marked increase was observed in the number of severe railroad and machinery crushes admitted, as compared with the preceding decade. The same rate of increase during the past five years has been observed; for of the 152 amputations performed during this period (1870 to 1874, inclusive), 118 were immediate operations, and the cases generally were of the most serious character.

No.	Admission.	Name.	Age.	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1870							
1	Jan. 1	William Hillyard	44	Ulcer of ankle	Leg	Chronic	Died	March 5, 1870
2	" 7	David G. Beath	28	Compound comminuted fracture of tibia	Knee-joint	Immediate	Cured	Feb. 19, 1870
3	Feb. 9	Daniel Nawn	29	Crushed hand	Hand	"	"	March 2, 1870
4	March 4	Patrick Cullen	55	Compound comminuted fracture of ankle	Leg	"	Died	March 5, 1870
5	" 5	James Eyere	36	" " of humerus	Arm	Secondary	Cured	July 4, 1870
6	" 17	John Davis	33	Necrosis of carpus following sprain	Forearm	Chronic	"	April 18, 1870
7	" 26	George Graham	13	Compound comminuted fracture of leg	Leg	Immediate	"	June 2, 1870
8	May 16	Robert Donnelly	11	Lacerated wound of the foot	Leg	"	"	July 1, 1870
9	" 25	George Denfield	30	Compound comminuted fracture of foot	Foot (Pirogoff)	"	"	Sept. 7, 1870
10	" 29	John Gagnar	19	" " of leg	Leg	"	"	June 8, 1870
11	June 1	David Gillan	27	Compound fracture of tarsus	Leg	"	Died	June 8, 1870
12	" 21	William Prescott	37	Compound comminuted fracture of leg	Leg	"	Cured	July 13, 1870
13	" 22	Patrick Harrington	5	" " of hand	Hand	"	Died	June 24, 1870
14	July 6	Alex. McConaghy	50	Strumous disease of ankle-joint	Leg	Chronic	Cured	July 19, 1870
15	Aug. 12	Patrick Casey	14	Compound comminuted fracture of humerus and scapula	Shoulder-joint	Immediate	"	Oct. 31, 1870
16	" 13	Ernst Karg	21	Compound comminuted fracture of leg	Knee-joint	"	Died	Aug. 23, 1870
17	" 19	John Wilson	40	" " of tarsus	Foot (Pirogoff)	"	Cured	Nov. 5, 1870
18	Sept. 16	Michael Earley	27	" " of forearm	Forearm	Secondary	Died	Oct. 9, 1870
19	" 22	Henry Williams	7	" " of leg	Knee-joint	Immediate	Cured	Dec. 9, 1870
20	" 27	Thomas Boyce	13	Compound comminuted fracture of foot	Forearm	"	"	Oct. 21, 1870
21	Oct. 1	Thomas Little	20	Lacerated hand and forearm	Leg	"	Died	Oct. 14, 1870
22	" 5	James Duval	40	Crushed hand	Forearm	"	Cured	Oct. 25, 1870
23	" 27	William McMullen	25	Lacerated arm, coal-mine explosion	Forearm	"	Died	Nov. 15, 1870
24	Nov. 2	William Kershaw	43	Compound comminuted fracture of arm	Arm	"	Cured	Nov. 25, 1870
25	" 19	Catharine Smith	40	" " of foot	Leg	"	"	March 11, 1871
26	Dec. 12	William Delaney	16	" " of forearm	Forearm	"	"	March 29, 1871
27	Oct. 13	Daniel S. Brown	24	Lacerated hand and leg	Hand	"	"	Oct. 25, 1870
28	Dec. 12	William Henson	24	Compound comminuted fracture of leg	Leg	"	"	Feb. 17, 1871
29	" 13	John Gerswille	29	" " of arm	Arm	"	"	Jan. 13, 1871
30	" 30	John Carey	17	Irritable stump	Foot (Pirogoff)	Chronic	"	April 28, 1871
31	1871							
31	Jan. 12	William Mitchell	16	Irritable stump	Leg	"	Cured	Feb. 20, 1871
32	" 13	Robert Cascaden	36	Railroad crush of leg	Leg	Immediate	Died	Jan. 31, 1871
33	Feb. 25	Peter Ryan	26	Compound fracture of humerus	Shoulder-joint	"	Cured	May 8, 1871

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
34	1871	Thos. Webster (col.)	16	Strumous disease of elbow after resection	Arm	Chronic	Cured	Nov. 23, 1871
35	March	William Bradley	44	Compound fracture of tarsus	Leg	Immediate	"	May 17, 1871
36	May	Louis Oswald	15	Crushed forearm	Arm	"	"	June 10, 1871
37	"	Geo. Cunningham	35	Compound fracture of foot	Foot (Chopart)	"	"	July 3, 1871
38	"	Mary Dorsey	7	Laceration of leg	Thigh	"	Died	June 2, 1871
39	"	James Canabue	30	Necrosis of carpus	Forearm	Chronic	Cured	June 28, 1871
40	"	Frank D. White	18	Railroad crush of leg	Knee-joint	Immediate	"	Sept. 20, 1871
41	June	John Forsyth	32	Compound comminuted fracture of arm	Arm	"	"	July 22, 1871
42	"	Thomas McFag	15	Laceration of foot	Foot (Pirogoff)	"	"	Jan. 27, 1872
43	"	Fanny McCauley	3	Compound fracture of leg	Knee-joint	"	"	June 30, 1871
44	"	Frederick Miller	11	Crushed leg by railroad	Leg	"	Died	Sept. 13, 1871
45	"	"	11	Irritable stump and necrosis	Leg	"	Cured	Sept. 13, 1871
46	"	Thomas Carroll	24	Compound comminuted fracture of leg	Leg	Chronic	"	Sept. 13, 1871
47	"	Nicholas Dowdell	15	Machinery crush of forearm	Forearm	Immediate	"	Sept. 2, 1871
48	July	Jacques Montgenie	18	Railroad crush of leg	Knee-joint	"	Died	July 6, 1871
49	Aug.	Ann Kelly	40	Crushed foot	Leg	"	Cured	Sept. 7, 1871
50	"	Joseph L. Clark	42	Necrosis of tibia	Leg	"	Died	Aug. 28, 1871
51	"	William Nelson	28	Gunshot wound of hand	Forearm	Chronic	"	Dec. 1, 1871
52	Sept.	James Dowdell	13	Railroad crush of ankle	Leg	Immediate	Cured	Sept. 16, 1871
53	"	William N. Perkins	42	Compound fracture of ankle-joint	Leg	"	"	Jan. 1, 1872
54	"	Patrick Hogan	50	Compound comminuted fracture of leg	Knee-joint	"	"	June 17, 1872
55	"	"	"	"	Leg	"	Died	Sept. 19, 1871
56	"	Albert Hopkinson	15	Forearm torn off at elbow-joint	Leg	"	"	"
57	"	Frank D. White	18	Irritable stump	Arm	"	Cured	Oct. 28, 1871
58	Oct.	John Rohan	50	Compound comminuted fracture of leg	Thigh	Chronic	"	Dec. 15, 1871
					Leg	Immediate	Remov'd by fr'nds	Oct. 23, 1871
59	Nov.	John Gorman	18	Lacerated hand involving wrist-joint	Forearm	"	Cured	Dec. 11, 1871
60	"	John Mears	23	Irritable stump	Foot (Chopart)	Chronic	"	Feb. 2, 1872
61	"	John Spring	41	Cancer of leg	Knee-joint	"	"	Jan. 30, 1872
62	"	George Morley	45	Crushed foot by railroad	Foot (Pirogoff)	Immediate	"	March 16, 1872
63	Dec.	John Keogh	34	Compound comminuted fracture of leg	Knee-joint	"	"	June 17, 1872
64	"	James Moore	35	Crushed foot by railroad	Foot (Chopart)	"	Died	Dec. 29, 1871
65	"	George G. Patterson	24	Crushed hand	Forearm	"	Cured	Jan. 19, 1872
66	"	Martin Brynn	11	Disease of knee-joint	Thigh	Chronic	"	June 11, 1872
67	"	John C. Russell	26	Compound comminuted fracture of leg	Leg	Immediate	Died	Dec. 25, 1871

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
68	1872	John Noble	23	Compound comm. fracture of ankle-joint	Leg	Immediate	Died	Feb. 15, 1872
69	Jan. 23	Benjamin Tally	67	Compound fracture of forearm	Arm	"	Cured	Feb. 6, 1872
70	" 16	Michael Dougherty	42	Lacerated wound of hand	Arm	"	"	April 26, 1872
71	" 22	William Nicholson	16	Injury of limb (amputated)	Leg	"	"	April 18, 1872
72	April 30	John Macomber	19	Necrosis of femur	Hip-joint	Chronic	Died	May 14, 1872
73	March 15	Joseph P. Hill	34	Compound fracture of forearm	Forearm	Immediate	Cured	April 25, 1872
74	May 14	"	34	Necrosis of stump	Forearm	Chronic	"	June 17, 1872
75	June 12	William Gibson	21	Compound comminuted fracture of hand	Wrist-joint	Immediate	"	July 1, 1872
76	" 23	John S. Watson	30	Compound comminuted fracture of left leg	Knee-joint	"	"	Nov. 11, 1872
77	" 24	William Burns	20	" " " of foot	Foot (Pirogoff)	"	"	Aug. 24, 1872
78	July 4	William Ford	19	" " " "	Foot (Pirogoff)	"	"	Aug. 22, 1872
79	" 11	Willet P. Cummings	22	" " " "	Foot	"	Died	July 30, 1872
80	" 13	Matthew Collins	30	Laceration of hand	Wrist	"	Cured	Aug. 13, 1872
81	" 29	George Kaines	25	Ankylosis of knee-joint	Thigh	Chronic	"	Dec. 21, 1872
82	Aug. 13	Edward Conner	20	Compound comminuted fracture of hand	Forearm	Immediate	"	Sept. 1, 1872
83	" 13	John Dunworth	46	" " " of leg	Leg	"	"	Oct. 17, 1872
84	" 14	William Connell	35	" " " "	Knee-joint	"	"	Oct. 14, 1872
85	" 15	James Robinson	75	Crushed shoulder	Arm	"	Remov'd by fr'nds	Aug. 22, 1872
86	" 20	John Hoso	13	Compound comm. fracture of forearm	Forearm	"	Cured	Sept. 6, 1872
87	Sept. 16	Andrew Schnapps	32	Complicated laceration of arm	Arm	"	"	Oct. 21, 1872
88	Oct. 5	James Flood	20	Compound comm. fract. of foot and thigh	Thigh	"	Died	Oct. 7, 1872
89	" 5	Isabella McGinnis	50	Carcinoma of leg	Leg	Chronic	"	Nov. 7, 1872
90	" 19	Thomas D. Sturgis	15	Compound comminuted fracture of foot	Foot (Pirogoff)	Immediate	Cured	Dec. 30, 1872
91	" 26	William E. Jackson	22	Irritable stump	Leg	Chronic	"	Dec. 21, 1872
92	Nov. 12	James Longhead	54	Necrosis of tibia	Leg	"	Died	Dec. 28, 1872
93	" 27	William Keever	50	Necrosis of wrist-joint	Forearm	"	Cured	Feb. 21, 1873
94	Dec. 28	Christian Goodyear	26	Compound fracture of forearm	Arm	Immediate	Died	Feb. 20, 1873
95	1873	Margaret Bradley	13	Carcinoma of leg	Thigh	Chronic	Cured	March 31, 1873
96	Jan. 21	Jacob Zikel	22	Laceration of arm	Shoulder-joint	Immediate	Died	Jan. 30, 1873
97	Feb. 5	Jacob E. Trantman	24	Compound comminuted fracture of femur	Thigh	"	"	Feb. 24, 1873
98	" 12	Thomas Walter	19	Necrosis of femur	Thigh	Chronic	"	Feb. 27, 1873
99	March 3	Ellen Cairns	21	Necrosis of tibia	Knee-joint	Chronic	Cured	Aug. 6, 1873
100	" 3	Thomas Ledson	55	Compound comminuted fracture of foot	Leg	Immediate	"	March 31, 1873

No.	Admission.	Name.	Age.	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
101	1873	Henry Todd	26	Synovitis of knee	Thigh	Chronic	Cured	April 26, 1873
102	March 12	James Hopper	15	Compound comminuted fracture of leg	Thigh	Immediate	Died	April 5, 1873
103	" 28	James McLaughlin	54	" " of tibia	Leg	"	Cured	May 26, 1873
104	April 1	John Kelley	20	" " of forearm	Arm	"	"	June 3, 1873
105	" 11	James Butler	22	Compound fracture of hand and forearm	Wrist-joint	Secondary	"	Aug. 1, 1873
106	May 9	Frank Dentinger	16	Compound comminuted fracture of leg	Thigh	Immediate	Died	May 28, 1873
107	June 1	Thos. W. Humphreys	39	Crushed foot by railroad	Ankle	Secondary	Cured	Aug. 7, 1873
108	" 5	Henry O'Neil	25	Crush of foot and leg	Leg	Immediate	"	Aug. 22, 1873
109	" 11	James Johnson	19	Strumous disease of tarsus	Leg	Chronic	"	Dec. 20, 1873
110	July 8	Frank Marks	10	Compound comminuted fracture of leg	Leg	Immediate	"	Aug. 11, 1873
111	" 11	Frank Swing	19	" " "	Leg	"	Died	July 29, 1873
112	" 24	William Veit	17	Lacerated wound of hand	Forearm	"	Cured	Aug. 11, 1873
113	" 31	William Procter	30	Compound comm. fracture of forearm	Forearm	"	"	Aug. 23, 1873
114	Aug. 14	Lizzie Sullivan	33	Necrosis of ankle	Leg	Chronic	"	Jan. 9, 1874
115	" 19	Charles Colby	13	Lacerated hand	Hand	Immediate	"	Sept. 27, 1873
116	" 31	Bentley Gaul	34	Gunshot wound	Hand	"	"	Sept. 6, 1873
117	Sept. 2	Elnor Ulrich	23	Railroad crush of leg	Thigh	"	"	Sept. 23, 1873
118	" 5	John Peters	30	Crushed foot	Ankle (Pirogoff)	"	"	Oct. 15, 1873
119	" 25	John Smith	25	Railroad crush of arm	Arm	"	Died	Oct. 10, 1873
120	" 27	William Fritz ¹	40	Crushed tarsus (stone)	Foot (Chopart)	"	Cured	Dec. 7, 1874
121	" 28	Joseph L. Orr	38	Machinery crush	Foot (Chopart)	"	"	Nov. 10, 1873
122	Oct. 4	Richard Warner	25	Crushed by a fall of coal	Leg	"	"	Jan. 10, 1874
123	" 15	John Gee	15	Machinery crush of elbow	Arm	"	"	Nov. 27, 1873
124	Nov. 18	Henry T. Sier	40	Railroad crush of arm	Arm	"	"	Jan. 1, 1874
125	" 20	Eugene G. Golder	23	Compound comminuted fracture of tibia	Knee-joint	"	"	Jan. 24, 1874
126	1874	Thomas Jay (col'd)	19	Compound comminuted fracture of foot	Leg	"	Died	Feb. 8, 1874
127	Jan. 11	James Carter	18	Railroad crush of hand	Forearm	"	"	Jan. 17, 1874
128	" 29	James Devlin	14	Compound fracture of leg	Leg	"	"	Feb. 20, 1874
129	" 16	Paul McCluskey	10	" " of ankle	Leg	"	"	Feb. 25, 1874
130	Feb. 26	Michael Hamill	12	Compound dislocation of ankle	Leg	"	"	March 18, 1874
131	" 28	Augustus Caswell	32	Compound comminuted fracture of arm	Arm	"	"	March 25, 1874
132	March 6	Richard E. Kendrick	11	Railroad crush of arm	Arm	"	Cured	June 10, 1874

¹ Severe neuralgia of stump followed; the posterior tibial and external popliteal nerves were excised, with entire relief.

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
133	1874	William Wilkinson	14	Cog-wheel crush of hand	Hand	Immediate	Cured	June 13, 1874
134	May 8	Wm. B. Flounders	28	Gnashot wound of wrist	Forearm	"	"	June 20, 1874
135	June 22	Fred. Blatchford	19	Machinery crush with hot rollers	Arm	Secondary	Died	July 11, 1874
136	July 1	David L. Bates	13	Crushed foot	Leg	Immediate	"	July 20, 1874
137	" 2	William White	30	Lacerated hand	Hand	"	Cured	Aug. 21, 1874
138	" 4	Moses Kinkade	15	Gnashot wound of hand	Hand	"	"	Aug. 12, 1874
139	" 10	William Maloney	4	Crushed leg by railroad	Leg	"	"	Aug. 24, 1874
140	" 23	James Williams	14	Compound comminuted fracture of foot	Leg	"	"	Oct. 19, 1874
141	" 25	William Kelley	23	Compound crushed foot	Leg	"	"	Jan. 15, 1875
142	" 25	"	23	Neurosis	Thigh	Chronic	"	Jan. 15, 1875
143	" 27	Catharine Dougherty	11	Crush of hand	Hand	Immediate	"	Jan. 15, 1875
144	Aug. 3	Charles Currie	15	Compound comminuted fracture of foot	Leg	"	"	Oct. 28, 1874
145	" 19	Joseph Anderson	22	" " of thigh	Thigh	"	Died	Aug. 21, 1874
146	" 24	Patrick M. Mullin ¹	21	Compound fracture of leg	Thigh	Secondary	Cured	"
147	Sept. 1	Doctine Newberry ²	40	Neurosis of femur	Thigh	Chronic	"	"
148	" 18	Peter Little ³	42	" " of ankle	Leg	"	"	"
149	" 4	William H. Geary	29	Machinery crush of hand	Forearm	Immediate	"	Oct. 7, 1874
150	Oct. 4	Andrew Nesby	10	Railroad crush of foot	Foot	"	"	Nov. 6, 1874
151	Nov. 23	James Barrett	40	Crush of knee, thigh, and leg	Thigh	"	Died	Nov. 24, 1874
152	Dec. 1	Charles B. Mason	24	Laceration of hand	Hand	"	Cured	Jan. 5, 1875

¹ Remains with bed-sore.² Remains with some neurosis.³ Remains with small ulcer stump.

Of the 152 amputations on 151 patients performed during the five years from 1870-1874 inclusive, 41 died, or 27 per cent.

116 were primary (1 double amputation). Of this number 81 were cured; 34 died, or 29 per cent.

5 were secondary. Of this number 3 were cured; 2 died, or 40 per cent.

29 were for chronic diseases. Of this number 23 were cured; 6 died, or 26 per cent.

Two amputations, one of the arm and one of the leg, both immediate, were removed by friends.

Table showing the various operations, with the results.

1	hip-joint amputation.	Chronic.	Died.
1	thigh	Immediate.	Cured.
7	"	"	Died.
1	"	Secondary.	Cured.
7	"	Chronic.	"
1	"	"	Died.
8	knee	Immediate.	Cured.
3	"	"	Died.
2	"	Chronic.	Cured.
21	leg	Immediate.	"
14	"	"	Died.
7	"	Chronic.	Cured.
4	"	"	Died.
12	foot	Immediate.	Cured.
2	"	"	Died.
2	"	Chronic.	Cured.
1	"	Secondary.	"
2	shoulder-joint	Immediate.	"
1	"	"	Died.
12	arm amputations.	"	Cured.
3	"	"	Died.
1	"	Secondary.	Cured.
1	"	"	Died.
1	"	Chronic.	Cured.
13	forearm	Immediate	"
3	"	"	Died.
1	"	Secondary.	"
4	"	Chronic.	Cured.
12	wrist and hand	Immediate.	"
1	"	Secondary.	"

56 of the amputations were of the upper extremity; of this number 9 died, or 16 per cent.

96 of the amputations were of the lower extremity; of this number 32 died, or 34 per cent.

Adding these results to the statistics already published, we have the total—

902 amputations in 896 patients. Of this number, 663 were cured; 230 died, or 25 per cent.; 3 were removed by friends.

618 of the amputations were primary. Of these, 460 were cured; 155 died, or 25 per cent.

95 were secondary. Of these, 55 were cured; 40 died, or 42 per cent.

183 were chronic. Of these, 148 were cured; 35 died, or 19 per cent.

Of the 230 deaths, 59 occurred within five days after the amputation; 32 occurred between five and ten days; 139 occurred after ten days.

Of the total number of deaths after amputations during forty-five years, we find that the mortality of the different months of these years was as follows: in

January,	11 died.	July,	29 died
February,	15 “	August,	22 “
March,	15 “	September,	19 “
April,	16 “	October,	21 “
May,	27 “	November,	11 “
June,	25 “	December,	19 “

It will be observed that the smallest number of deaths occurred in January and November, when the hospital wards have pure but heated air by forced ventilation, while in the months of May, June, July, and August, when the ventilation in the hospital is effected by simply opening windows, we find the largest number of deaths. Mr. Edward Richardson has examined the Hospital records, and has found that during a period of twenty-five years, from 1850 to 1874, inclusive, in 2015 deaths in the surgical wards, the months of February and November also exhibit the smallest number; from May to September the mortality was very much greater; while in July and August the deaths were double the number of those in February. These results may be induced by various agencies, but they naturally suggest the subject of ventilation in the summer in hospital wards, and whether proper change in the air of a ward can be brought about without open fireplaces or currents of air forced from a fan. It is well known that opening all the windows of a ward in certain states of the atmosphere will not change the air at all, and there is little doubt that either of the above-mentioned plans to secure ventilation might be adopted with much better results.

Analyzing the 902 amputations, we find the mortality and general results as follows:—

6 hip-joint amputations; 2 chronic, cured; 3 chronic, died; 1 immediate, died.

121 thigh amputations; 49 of these were immediate; 24 cured; 25 died, or 51 per cent. 18 were secondary; 11 cured; 7 died, or 39 per cent. 54 were for the cure of chronic diseases; 41 cured; 13 died, or 24 per cent.

33 knee-joint amputations; 24 were immediate; 16 cured; 8 died, or 33 per cent. 1 secondary cured, 1 died; 6 chronic cured, 1 died, or 17 per cent.

293 leg amputations; 190 were immediate; 118 cured; 72 died, or 38 per cent. 34 were secondary; 15 cured; 19 died, or 56 per cent. 67 were chronic; 53 cured; 14 died, or 21 per cent. 2 immediate, removed by friends.

65 foot amputations; 47 were immediate; 37 cured; 10 died, or 21 per cent. 5 were secondary; 4 cured; 1 died, or 20 per cent. 13 chronic; 12 cured; 1 died, or 8 per cent.

25 shoulder-joint amputations; 19 were immediate; 12 cured; 7 died, or 37 per cent. 1 secondary cured; 5 chronic cured.

138 arm amputations; 107 were immediate; 87 cured; 20 died, or 19 per cent.; 1 removed by friends. 19 were secondary; 12 cured; 7 died, or 37 per cent. 11 were chronic; 9 cured; 2 died, or 18 per cent.

160 forearm amputations; 127 were immediate; 115 cured; 12 died, or 9 per cent. 15 were secondary; 10 cured; 5 died, or 33 per cent. 18 were chronic; 17 cured; 1 died, or 6 per cent.

3 elbow-joint amputations; 3 immediate, cured.

52 wrist and hand amputations; 48 immediate, cured; 1 secondary, cured; 3 chronic, cured.

Of 881 patients whose ages have been recorded—

288 were under 20 years; of this number, 246 were cured; 42 died, or 15 per cent.

259 were between 20 and 30; of this number, 193 were cured; 66 died, or 25 per cent.

176 were between 30 and 40; of this number, 124 were cured; 52 died, or 30 per cent.

105 were between 40 and 50; of this number, 71 were cured; 34 died, or 32 per cent.

53 were upwards of 50; of this number, 28 were cured; 25 died, or 47 per cent.

The statistics of amputation at the Pennsylvania Hospital will thus compare favourably with those of other hospitals, and with the published reports of cases generally.

So much has been written on "hospitalism" and its influence on amputations especially, that a few general statistics from the records of this, the oldest hospital in America, may not prove uninteresting.

During the past twenty-five years 30,174 surgical cases have been treated, with a mortality of $6\frac{3}{4}$ per cent. Deducting from the number of deaths

those probably not in any wise influenced by hospital air, viz., those from cancer, fractures of the vertebræ, severe skull and trunk injuries, from gunshot and other wounds of the chest and abdomen, from burns and shock, we have the mortality reduced very nearly one-half. In this mortality are included all the deaths from hemorrhage, exhaustion, grave compound and other fractures, all manner of wounds following surgical operations, erysipelas, and pyæmia. Of the last-named disease, during the past six months not a single case has occurred in the Hospital. With such results it appears that the patients have had as good, or perhaps a better chance than if treated under the usual home influences.

There is no reason to doubt that still more favourable results may yet be attained; from an ample amount of space around each bed, the greatest practicable separation of suppurating wounds, the constant cleansing of the walls and floors, with frequent painting and occasional renewal, forced ventilation by fans and heat flues, and the maintenance of all the needed precautionary care by the daily thorough inspection of the hospital throughout.

NOTE.—In May, 1874, the Managers of the Pennsylvania Hospital appointed an "Officer of Hygiene" or medical inspector as one of the officers of this institution, who is required daily to examine and report the condition of every part of the hospital.

ART. II.—*Rupture of the Perineum. With a Description of a New Operation.* By D. WARREN BRICKELL, M.D., Prof. of Obstetrics and Diseases of Women in the Charity Hospital Medical College of New Orleans. (With a wood-cut.)

A GREAT number of women are the subjects of a partial or complete rupture of the perineum, as a result of the passage of the mature fœtus. Rupture through one or both anal sphincters is comparatively rare, but when such an accident occurs the acute resultant suffering and discomfort are such, that medical skill must be invoked. If the patient is not operated on primarily—that is, immediately after the rupture,—although secondarily, she nevertheless soon comes under the hand of the surgeon.

But, although it is surgically true that anything approaching a considerable rupture of the space between the posterior margin of the vulva and the anus ought to be promptly restored by operation, it is practically true that great numbers of women, high and low, are discharged from the care of physicians and midwives with great loss of posterior vaginal support, and sooner or later they become miserable from uterine or cystic dislocation, or both.

These constitute the larger class falling ultimately into the hands of the surgeon, and their condition is often deplorable indeed, as will be seen illustrated in some cases cited in this paper.

During many years past, I have repeatedly operated for partially ruptured perineum, but only twice for complete rupture. The rupture in these last occurred in the hands of an old midwife, and in both cases the operation was primary, and what is, the world over, called successful; that is, the sphincter ani was restored, and a perineal wall of reasonable thickness was established. In two cases of operation for partial rupture I failed to get union. In one of these cases, a very old woman, the quilled suture was used; in the other, a middle-aged woman of rather frail constitution, the interrupted wire suture was used. In both these cases the rupture was of many years' standing, extended down to the margin of the anus, and wandered decidedly away from the central line—the tissues next the bone towards which the rupture ran being manifestly cicatricial in consistency, as well as positively retracted towards the bone.

Comparing the results of all my other operations with those of other operators coming under my observation, I candidly believe my work will be considered most favourably. But I never arose from an operation, never took an ultimate view of my best result, never viewed the best results of others, without feeling that all the operative procedures resorted to are to a great extent defective—unsurgical, if I may so term them—and, consequently, that general results should be better.

What are the operative methods of to-day—those now generally acknowledged? The clamp suture, the quill suture, and the interrupted suture. The two former are closely allied to each other, and their principle of action is, that to the extent of the superficies of their surface applied on each side of the denuded surface, they will hold such surface directly in contact—the denuded surface behind them being held in apposition by the lateral tension of the sutures, and that in front of them by light auxiliary sutures. The anticipated *modus operandi* of the interrupted suture is the lateral force exerted. These sutures are plunged deeply into the structures on each side of the denuded surface; the free external ends are then twisted together, and the surfaces then approach each other *laterally*.

Now, I contend that neither of these modes of procedure is free from objection, and on purely mechanical grounds. In the case of the plain interrupted suture the truth of my proposition is most clearly seen. I contend that, as the tissues into which we plunge these sutures are soft, in every direction, the force resultant on twisting the external ends, and which must tend to effect lateral apposition, will inevitably exert *antero-posterior* power (drawing the posterior margin of the denuded surface towards the anterior), and *corrugation of the denuded surfaces must ensue*. This corrugation means reduction of the areas of denuded surfaces

brought in contact, and even if union by first intention takes place, it is not by any means to the extent of the surfaces prepared by the knife of the operator. It is not union deeply into the vaginal canal, restoring the wedge-shaped perineum, approximating the posterior vaginal wall to the anterior, and supporting the latter; but it is only the formation of an abrupt wall, which partially closes the gaping orifice between the neck of the bladder and the margin of the anus. And this is the most favourable view to take of things. But I go further, and declare that when these corrugated surfaces are thus brought together, and even when the happiest tendency to union by first intention exists, under the antero-posterior tension that exists, with necessarily retractile effort on the part of the tissues within, the whole corrugated surfaces will not be retained in apposition, for the forces named will cause the wire to cut through the edges on the inside, and in proportion to the extent of this cutting the denuded surfaces slide backward and retire from each other. And this cutting occurs frequently within thirty to fifty hours, or before firm union can take place. This is a point I have practically observed again and again.

But I have known a surgeon to say, why does not this same result occur in front, outside the vulva, where the ends of the suture are twisted together? The answer is obvious. The tension exists both anteriorly and posteriorly, and if the tissues were precisely similar we should look for the cutting as often in the one place as the other; but they are totally dissimilar; the dermoid tissue externally is possessed of far greater power of resistance, hence the weaker tissue must yield first.

But we must not forget that it is not an unusual occurrence for the wires to cut in this way, both anteriorly and posteriorly. I hardly think there can be an operator who has not observed it. And this only more fully illustrates the operation of the mechanical forces.

In regard to clamps or quills, the very same laws apply. Clamps or quills of a quarter or three-eighths of an inch diameter, cannot hold surfaces of one, one and a half, or two inches in diameter in apposition; the same tension exists, and the same results must ensue. Add to this the immediate consequences that sometimes ensue on interruption of circulation by too firm pressure of clamps or quills, and I have learned to estimate the operation as secondary even to the interrupted suture.

If the reader does not clearly comprehend the mechanical difficulties I have tried to explain, let him perform this simple demonstrative experiment. Take a fold of chamois leather, plunge a curved surgical needle armed with a silken ligature clear through one side, run down an inch and a half, plunge the needle back again and through the opposite side, run back opposite the point of departure and plunge through again. Now tie *gently* the opposite ends of the suture, and the surfaces of chamois included by the suture will approach each other laterally; now tie *firmly*, as is essential in the operation under consideration, and he will see the

posterior and anterior portions of the suture approximating each other, with a bunching up or corrugation as the inevitable condition of the approximation.

Now what is the mechanical desideratum, admitting the defects pointed out? Neither more nor less than *lateral* force which will approximate the entire denuded surfaces smoothly *without antero-posterior force exerted on the tissues*. I have carefully searched accessible authorities, and nowhere can I find appliances suggested which meet this all-important indication.

More than two years ago it occurred to me that permanent canulated needles plunged deeply on each side of the denuded surfaces, with wire or silk sutures traversing them, ought to serve the purpose. The general mechanical principle involved is correct, but there is great difficulty in procuring proper needles, and then there is lack of facility of adaptation. And indeed if adapted they constitute at last only a compounding of the main principle involved. The result was that I determined on the simple little instrument, a wood-cut of which is here exhibited. I call it a *perineal*



stay. These stays are made of various lengths, from $\frac{3}{4}$ to $2\frac{1}{4}$ inches in the main shaft, not including the two forked ends. The cut represents exactly one of the sizes made by Tiemann & Co., of New York. The material is supposed to be the very best steel, to avoid bending, and it is nickel plated to avoid irritation consequent on corrosion. The cut shows the stay with its cap or movable internal end off.

How is the stay applied? The parts having been denuded and made ready, the suture is deeply imbedded on each side, as if for application of the quill, clamp, or interrupted suture; a stay with shaft a little longer than the antero-posterior depth of denuded surface is then selected, and its cap put on; now (holding the external ends of the suture in the hand) pass the stay between the denuded surfaces, and fix the cap fork firmly against that part of the suture which shows itself back in the vagina; now let an assistant hold the stay in this position, and let the operator twist the free ends of his suture together; they will soon fix themselves in the *external fork* of the stay, and the assistant can let go. The operator now steadies the external end of the stay with his thumb nail or with a pair of forceps, and then continues the twisting of the suture until he is satisfied with the adaptation of parts. The operator will now see clearly that the *direct* power that has been exerted by his suture is *antero-posterior or through the axis of the stay*, the two forks of the stay being the fixed or antagonistic points of impingement. The *lateral* power exerted is *indirect*, and this approximates the denuded surfaces *smoothly*,

corrugation of tissues being impossible. All of this is readily demonstrated on the fold of chamois skin.

The lower stay having been thus adjusted, a second and a third, if necessary, are fixed above it at intervals of $\frac{3}{8}$ to $\frac{1}{2}$ an inch, and above the highest an auxiliary suture is lightly and carefully adjusted without a stay, just to insure that the upper edges do not gape or slip when the woman may move her limbs. If deemed necessary by the operator, light auxiliary sutures may be placed between the stays in order to bring the edges of the skin nicely in apposition.

The operation being completed in this manner, I have no hesitation in saying that the operator of experience will find the whole locality more firmly held together and sustained for union by first intention, than under any other procedure.

Before I ever operated in this manner I was led to anticipate an objection, viz., fistula resultant on the presence of the stays between the denuded surfaces. Theoretically, I feared no such result. I had watched through years the results of even protracted presence of large metallic sutures, and I had seen no permanent fistula. The same happy results should be expected after the use of a silver or nickel plated stay, if its size be not exaggerated. The results in cases adduced in this paper show the correctness of the conclusion.

The object of having a cap or movable fork on the internal end of the stay, is for facility of removal of the stay when union is attained, say on the fourth, fifth, or sixth day. After cutting the suture, the cap of the stay is held in the vagina by a slender curved forceps, and the shaft is drawn straight out without disturbing the union. The cap is brought out by the forceps through the vulval orifice.

CASE I. Ruptured perineum; complete prolapsus uteri.—Mary B., Irish, widow, æt. 40, in United States thirty years; general health good; has had a little diarrhœa recently; has had seven children; first child born eighteen years ago; midwife attended her; was in labour twenty-four hours; second stage lasted from 6 to 10 P. M.; head of child was pressing on perineum for five to seven hours before delivery. Perineum was ruptured during passage of child, no attempt made to heal it. Never had trouble afterwards in second stage of labour; had one abortion nine years ago.

Present condition.—Perineum ruptured to within three-eighths of an inch of the anus. Posterior column of the vagina apparently torn loose from the sphincter of the vulva; tissues soft and healthy; as she lies on the back the vulva gapes widely open; moderate pressure backwards of the posterior wall of the vagina reveals the lips of the uterus just within; pretty firm "bearing down" on her part throws the womb nearly entirely out the body, and its lips are engorged, thick, and heavy, but without ulceration. If she stands on her feet the womb protrudes, her distress is very great, and she is incapable of exertion.

This is the first case on which the stays were used. Those used were made in a hurry by a rude workman, could not be called polished, and on account of negligence of another workman, were not even electro-plated.

The parts were pretty freely denuded, and on account of the great general relaxation, this denudation extended more than half way up the vulval orifice proper. Three stays were applied, with light auxiliary sutures between them, and above and below the upper and lower ones.

Two days after the operation she was seized with active diarrhœa, which at last really became alarming. Night and day she was on the bed-pan, and it was almost impossible to nourish her. The parts operated on maintained a good appearance, however, there being no heat, swelling, or discharge. The stays remained fixed. Her urine was regularly drawn, and the vagina was regularly washed out and anointed with carbolic oil. She was in such a condition of health, however, that I feared union might not have taken place, and I delayed removal of stays and sutures until the end of the tenth day. They were now removed, and extraordinarily good union was found. Each stay was found somewhat corroded, and of course their tracks remained open. In the course of ten days two of these were closed, and when she left the hospital the third had closed. For ten or twelve days after the stays were removed the diarrhœa continued, and altogether she was greatly reduced.

Results.—For some time before she left the ward she was walking about comfortable and happy; the parts were firmly healed, with a deep, thick wall below, and growing thinner as the vulva was ascended. Before discharging her I introduced a moderate sized Hodge bar pessary, advising her that it would be best to wear it for some months. She promises to return for inspection.

CASE II. Ruptured perineum; complete extrusion of a retroflected uterus.—Bridget M., Irish, æt. 40; in New Orleans twenty-three years; single; general health pretty good; signs of syphilitic taint; does general housework, cooks, washes, etc. Declares she never had a child, but physical evidences contradict her.

Present condition.—Perineum has been ruptured half way to the anus, and to the right of the median line; fibres of the posterior column of the vagina have also the appearance of being broken loose from the vulval sphincter. In the erect posture the uterus drops entirely outside the body; in the recumbent posture she readily extrudes it, and when out it is found to be completely *retroflected*, a condition I have never before observed. Of course she is utterly miserable.

On the 29th of November, she was operated on precisely in the same manner as Case I., two stays only being used. No untoward symptoms occurred; very little local heat, and moderate swelling; but she is a restless and nervous patient. Stays and sutures were removed on the morning of the 11th day. Stays in this case were of plain steel.

Result.—Union throughout the extent of denuded surfaces, except in seats of stays. Both of these instruments were much corroded, and the fistulous tracts were distinct, the lower one especially. At the end of eight days the upper fistula was closed. The lower fistula was larger and required canterization. When she left the hospital it was nearly closed. A Hodge pessary was introduced, and she went away happy, promising to return for inspection.

CASE III. Ruptured perineum; complete prolapsus uteri; cystocele.—Catharine S., German, æt. 36; married eight years; had three children, first one ten months after marriage; perineum ruptured in first labour; general health pretty good; does all sorts of housework; came in December 5th, because unable to work longer for her family.

Present condition.—Distinct cystocele, with great hypertrophy of the tissues of the neck of the bladder; in the erect position the uterus protrudes one and a half inches; lips highly engorged, but not ulcerated; perineum ruptured to within three-eighths of an inch of the anus, ruptured to the right of the median line; on this side the tissues are firm and cicatricial, on the left they are soft and superabundant; vulva gapes widely as she lies on her back; posterior vaginal column presents appearance of being torn loose from its lower attachments; the original laceration must have extended freely into the vagina, as is indicated by cicatrization.

Operation.—Performed double operation December 9, 1874: 1st. For reduction of capacity of vesico-vaginal wall, by extensive denudation from near meatus urinarius to the womb, and the application of ten transverse *catgut* sutures, interrupted. 2d. By deep and free denudation of lower wall, extending considerably up the sides of the vulva, and then the application of two silver-plated stays, with light auxiliary sutures, as in Case I.

Not a single untoward symptom occurred in this case, no local heat or swelling. On the sixth day the stays and auxiliary sutures were removed, and perfect union in every part had taken place, save only in the seats of the stays. But these stays were not at all corroded, their tracks were very small, and in a few days they closed entirely. The finger carefully passed along the vesico-vaginal wall, could detect no *catgut* sutures, and there was firm union throughout.

Result.—This woman was discharged wearing a Hodge pessary, and had the best artificial perineum I ever saw.

CASE IV. *Relaxed vagina and perineum; cystocele; protrusion of uterus.*—Mary J., Irish, 19 years in New Orleans; æt. 52; widow with five children; married at fifteen; widow at twenty-seven; had thirteen children and one abortion in that time; no plural births; tall woman of large frame and muscular; cooks, washes, etc. Entered hospital September 14th. I took charge of her in October.

Present condition.—Complete relaxation of vaginal walls, with bagging of perineum, but no rupture. Vulva gapes widely as she lies on her back, and it is clear to my mind that the lower end of the posterior column of the vagina is broken loose from the sphincter of the vulva. Very moderate exertion throws the vesico-vaginal wall clear outside the vulva, and the lips of the womb, which are much engorged, also protrude. She is no longer able to work for her children.

First operation.—This case presented before my stays were made, and although without much faith, I operated for reduction of the vesico-vaginal wall by extensive denudation, and the application of ten transverse interrupted sutures of silver wire. Good cicatrization was procured, and the womb was drawn high up while she lay on her back; but when she began to walk about, there being no posterior and inferior support, descent began. The result was a

Second operation, for reduction of *posterior* wall, and partial closure of the vulva. The denudation in this case was carried to the depth of $2\frac{1}{4}$ inches on the posterior wall, and gradually tapered up the sides of the vulva. Before placing the stays, three *catgut* sutures were placed *across* the posterior wall, in order to overcome the great amplitude. Above these were placed two plated stays, and then light auxiliary sutures.

In this case I tried another experiment. Instead of applying a silver suture to the lower stay, I applied the *catgut*, tying it in the external fork of the stay. On the morning of the sixth day the stays and silver

sutures were removed, but the catgut sutures were not disturbed. The union in every part except the tracks of the stays was perfect. In a few days these tracks closed.

Result.—The result in this case is certainly most satisfactory. The healing in all parts of the denuded surface is complete; the posterior wall of the vagina is very much contracted, and is drawn up against the anterior. At this moment the patient is still in hospital, but she will soon be able to leave with a pessary applied. When lying on her back she is no longer able to extrude bladder or uterus.

Remarks.—1. It will be seen that in Cases I. and II. the tendency of the stay to produce permanent fistula was thoroughly and most satisfactorily tested. Not only were the instruments used of naked steel, imperfectly polished, but they were permitted to remain *in situ* twice as long as is at all necessary; yet four out of five tracks healed up readily, and the fifth was steadily closing when the patient left the hospital. I early determined to fully test this point in the operation, for conversation with medical gentlemen showed me that this was an objection in nearly every mind. The experiments made ought to be considered satisfactory.

2. Notwithstanding the active and really dangerous intercurrent diarrhoea in Case I., and the evident syphilitic taint in Case II., the solidification of structures in the true perineal region of each case is far more satisfactory than I have been in the habit of seeing. There is no abrupt wall which merely closes the external gaping orifice, but a thick triangular space between the posterior vaginal wall and the rectum. The vaginal walls are also brought together, and there is the clear prospect of mutual support.

In Case III. this same result is achieved, only more completely, as I denuded more thoroughly on acquiring confidence in the mode of operating.

3. In Case IV. there was no rupture of perineum, but free reduction of amplitude of posterior wall and vulval orifice was necessary, extensive denudation was resorted to, and the result is most satisfactory. In all the cases general relaxation was such that partial closure of the vulval orifice was deemed necessary, and the stays acted most satisfactorily.

4. *Catgut sutures.*—I cannot forbear calling especial attention here to the use of catgut sutures in this operation. We all know that while the metallic suture is in one respect innocuous, nevertheless it is wholly inelastic, and wherever there is much resistance there is the tendency to cut. In Case IV. I used catgut instead of silver wire on the lower stay; both sutures, catgut and wire, were plunged very deeply on the sides, and both were drawn tightly on the stays. Although both stays were removed on the morning of the sixth day, the silver wire was found cutting the skin by lateral pressure, while the catgut, in consequence of a manifest elasticity (somewhat increased since introduction), had not cut at all. It was also noticeable that the little auxiliary silver sutures were cutting.

In describing the operation in Case IV., I mention the application of three lateral sutures to reduce amplitude of the posterior vaginal wall. Of course, these sutures were entirely covered up in applying the first stay, and they appear to be completely absorbed. Even the catgut suture that was applied to the first stay in this case was not removed when the stay was; it was simply cut off close to the sides, and it seems to have been entirely absorbed.

In this Case IV. I also applied ten catgut sutures laterally to the vesico-vaginal wall; the wall has healed beautifully, and there is no trace of the sutures. On the basis of these experiences I am led to prefer the catgut to the wire, and I shall experiment further and more fully.

In conclusion, I repeat, that so far as my researches go, I find no mention made of the necessary observance of the mechanical principle I have pointed out in the treatment of this surgical affection, nor of any even similar contrivance for the satisfactory demonstration of the principle. If the ideas have ever been advanced before, I only wonder that they have not commanded the attention of the profession. Both theory and practice prompt me to urge the operation on the reader; I am sure he will not regret a resort to it. I believe the application of the mechanical principle indicated may in all probability be extended to some other plastic operations. Modifications of the little instrument used will probably be made; already I am about suggesting one to the instrument maker.

POSTSCRIPT, Feb. 8, 1875.—While the foregoing was passing through the press I was operating on Case 5. I have only time to say that in this case all sutures used were of catgut; that two of these were placed transversely across the posterior wall far in the vagina, to effect reduction of amplitude; that two others were wholly auxiliary—one being above and the other below a single stay also fixed by a catgut suture—that the stay was removed at the end of the fifth day, and that all the sutures were allowed to remain *in situ*, as purely experimental.

The result in this case is really beautiful. No fistula exists, the wedge-shaped perineum is restored solidly, the posterior vaginal wall is drawn closely to the anterior, and at the time of writing all traces of catgut sutures are gone.

This case most clearly illustrates the superiority of catgut suture. They held the denuded surfaces fairly in contact, never irritated at all, and there was not the slightest cutting resultant on tension.

ART. III.—*Examination of Coloured School Children's Eyes.* By PETER A. CALLAN, M.D., Assistant Surgeon to the New York Eye and Ear Infirmary.

EXAMINATIONS of schools in Europe, in order to determine the refraction of the scholars' eyes, have of late years been of quite frequent occurrence.

Jäger was one of the first to make examinations, and the only one to determine the refraction in new-born children; he was followed by Cohn, of Breslau, who tabulated 10,060 school children. Erismann and Dobrowsky of St. Petersburg, Hofman of Wiesbaden, and many other European oculists, made examinations of schools and universities, and all found an increase of myopia in the higher classes of the lower schools, and in the higher schools and universities alarmingly high percentages of myopia. The increase of myopia could, in a great part, be shown to depend on badly lighted studyrooms, unsuitable seats and desks, too long continuous hours of study, and a confined range of vision.

Jäger's examination is quite interesting, inasmuch as all his calculations had to be made with the ophthalmoscope, no other means being possible under the circumstances, and as there are but few, if any, who excel him in the use of that instrument, his results must be regarded as accurate. He found 75 per cent. of myopia amongst the new-born children, ranging in degree from a $\frac{1}{20}$ to a $\frac{1}{4}$. Only in a few cases was posterior staphyloma (conus) present. This very large percentage of myopia is due to the great thickness of the infantile lens, and to the as yet imperfectly developed zonula zinnii, not being able to exert any influence on it. Cohn tabulated 10,060 school children, 6059 of whom he examined personally. He examined the scholars with test-types at 4 feet distance, and in this way most of the cases of myopia less than $\frac{1}{30}$ escaped, and were reckoned to the emmetropes. The same author¹ in 1871 examined some 240 village school children, and found 88 per cent. apparently emmetropic. In each of the apparently emmetropic eyes he put s. atropia. When the accommodation was completely paralyzed, the emmetropes were again examined, and as a result all the emmetropes became hypermetropes; the greatest number ranging in degree from a $\frac{1}{30}$ to a $\frac{1}{20}$ of hypermetropia.

Erismann² found in his investigations as high as 42 per cent. of myopia in certain classes, and only 26 per cent. in the whole school, while hypermetropia in the lower classes amounted to two-thirds. Commenting on this large number of H. in the lower classes, he adds: "Hypermetropia is the normal refraction of the healthy youthful eye, and not that which we denominate emmetropia, still less myopia, as they are only the excep-

¹ V. Græfe's Archiv, vol. xvii., part 2, p. 315.

² V. Græfe's Archiv, vol. xvii., part 1, p. 1.

tion at that age. . . . The smaller portion remain hypermetropic, but the *greater number become myopic*, having passed through a transitory state, *i. e.*, emmetropia; some remain, however, in this state through fortunately favouring circumstances."

Donders' views on this subject are decidedly in opposition to the above. His doctrine is, youth hypermetropia, adolescence emmetropia, old age hypermetropia acquisita.

Donders, in his classical work,¹ remarks, under Chapter V. :—

"*The Emmetropic Eye.*—Slight degrees of H. are in youth not even to be proved, much less to be reduced to their numerical value; indeed, whenever a deficiency of refractive power exists in the eye, when in a state of *absolute rest*, it is supplied by the accommodation. And even if the eye in paralysis of accommodation should be emmetropic, the tone of the accommodation alone affects a slight degree of myopia, consequently the actually emmetropic vision requires, in a certain sense, a minimum of H., and that minimum is capable of no accurate taxation, because to the tone itself a certain latitude, perhaps from $\frac{1}{100}$ to $\frac{1}{40}$, should be allowed.

"In this sense, and it is practically the only correct one, the majority of eyes are undoubtedly emmetropic."

The selection of coloured scholars was not made without good reasons. Heretofore nearly all the examinations have been made in Germany, and, needless to remark, on whites. It is to most familiar that there is a very large percentage of myopia amongst the students in the gymnasiums and universities of Germany; the percentage is much greater there than in the other countries of Europe. The Germans acquire myopia by their long years of study, having perhaps inherited a predisposition to it, or inherited it already developed and increased in attaining their manhood. Our coloured brethren as a rule never did enjoy a thorough system of education. The present generation in New York may be said to enjoy as thorough as the city affords; but their forefathers did not; neither have they been raised to such pursuits as demand a very close application of the eyes, *viz.*, engraving, etc.; *cæteris paribus* the negro's eye should approach nearest to a natural eye, *i. e.* normal eye. The very best material for examinations of this kind could be obtained in the Southern States, where, until of late years, the negro was unjustly debarred from the luxury of spoiling his eyes, *i. e.* a modern education.

The examination was begun last spring, and finished before the summer vacation. In examining the scholars, Snellen's test types were also—"A" and "E" old and new series—placed in the wall of the study room. The scholar to be examined was placed 30 feet distant from test types, and each eye alternately tested on card "A" for example, the result being noted; then convex and concave glasses were placed in turn before each eye, and

¹ Accommodation and Refraction, 174, German edition, 148.

pupil asked to read card "E." This changing of the examined card was to prevent learning by heart and consequent deception on the part of the scholars. Each pupil was likewise tested for colour blindness. Cohn was very fortunate in being able to examine two hundred and forty scholars' eyes under the influence of *s. atropiæ*, an opportunity which does not present itself very often, and such a procedure was entirely out of the question in the present instance, particularly as the coloured children feared from the first, that their eyes were by a species of legerdemain to be taken out, and then and there replaced: a belief, by the way, which is not confined to coloured children, but to very large children of the Caucasian race. Not being able to put *s. atropiæ* into the scholars' eyes, we put it in our own, so as to thoroughly paralyze the action of the ciliary muscle, and kept our eyes in that condition during the ophthalmoscopic examination of the scholars' eyes. Each scholar's eyes were separately examined with the ophthalmoscope in the upright image, and the correcting glass used to view fundus distinctly gave the refractive condition of the examined eyes. In this manner the examination was made with all due accuracy. Our eyes being under the free influence of *s. atropiæ*, we were not able to use our accommodation, and the glass used to see the fundus gave the desired refraction.

In theory it is quite simple to estimate the refraction by means of the ophthalmoscope—the refraction of the examiner's eyes being known, say emmetropic, and if he sees distinctly the fundus of examined eye without accommodating or the aid of glasses, then is the refraction of examined eye likewise emmetropic; but if he does not accommodate, and can only see with minus or plus glasses as correction, then there is myopia or hypermetropia, of a degree indicated by the glass, plus the distance of nodal points of both eyes in myopia and less the distance in hypermetropia. When the examining surgeon is ametropic, then his refractive condition must be taken into consideration.

Apparently it involves a small amount of calculation in any given case, when the refraction is obtained, but a very important factor must not be lost sight of, viz., can the examiner avoid accommodating, and rely on his correcting lenses in the ophthalmoscope in order to see the fundus of an examined eye distinctly?

We all know how difficult it is, when examining in the direct or upright image, to avoid using our accommodations, and what a large amount of practice in the use of the ophthalmoscope it demands, before we can say that our ciliary muscle is under our control; in order to avoid this difficulty, and place the results of an examination beyond dispute, *s. atropiæ* must be used either in the eyes to be examined, if possible, or in the examiner's own eyes.

Two public schools were examined; both together contained 457 scholars.

The following is the result of the examination : 431 emmetropic, 94 per cent. ; 12 myopic, 2.6 per cent. ; 14 amblyopic, 3 per cent.

Public School No. 3 contained 293 scholars : 274 emmetropes, 10 myopes, 9 amblyopes.

Public School No. 4 contained 163 scholars : 157 emmetropes, 2 myopes, 5 amblyopes.

School No. 3 has a percentage of 3.4 per cent. myopes, while School No. 4 has only 1.2 per cent. myopes ; the explanation is that School No. 3 has an excellent corps of teachers, and is really the coloured high school, and, in consequence of its superior advantages, is frequented by scholars of well-to-do parents from all parts of the city proper, Manhattanville, and Harlem.

School No. 4 has only a local attendance. Had we examined an equal number of white scholars, we are fully satisfied that our examination would show a much larger percentage of myopia than that found amongst the coloured scholars, viz., 2.6 per cent.

Public School No. 3. Primary Department.

Classes.	Boys.	Girls.	Ages	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	19		9—17	18	0	1
“ “		21	“	19	0	2
3d and 4th “	32		7—15	32	0	0
“ “		36	“	35	0	1
5th and 6th “	27		5—12	26	0	1
“ “		36	“	35	0	1
Total,	171			165	0	6
Per cent.				96.5		3.5

Grammar Department. School No. 3.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	8		12—19	6	2	0
“ “		16	“	13	2	1
3d and 4th “	14		10—17	11	3	0
“ “		19	“	18	1	0
5th and 6th “	13		10—17	13	0	0
“ “		14	“	12	2	0
7th and 8th “	24		9—15	24	0	0
“ “		14	“	12	0	2
Total,	122			109	10	3
Per cent.				89.3	8.2	2.5

In the above public school there were nine cases of amblyopia, three of which depended on astigmatism, and for convenience, put under that head, as likewise one case of mixed refraction, the one eye being myopic, whilst

the other was hypermetropic; the remaining five cases depended on macula cornea.

Primary Department. Public School No. 4.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	20		6—13	20	0	0
“ “		24	“	24	0	0
Total,	44			44		

Grammar Department. Public School No. 4.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	15		12—19	15	0	0
“ “		26	“	23	1	2
3d and 4th “	12		11—18	12	0	0
“ “		30	“	29	0	1
5th and 6th “	14		11—17	14	0	0
“ “		23	“	20	1	2
Total,	120			113	2	5
Per cent.				94.2	1.6	4.2

In Public School No. 4 there were only five cases of amblyopia, two of which depended on astigmatism; the remaining three cases on macula cornea.

The following tables show the number of scholars who were able to read the test types at the given distance with concave and convex glasses. In the majority of cases, in testing with convex glasses the scholars could not see well with them, but making them close the eyes and remain so for a short period of time, then again trying they had a vision of $\frac{2}{20}$. Very few of them but gave the preference to concave glasses, and in about 10 per cent. of the scholars they imagined that the concave glasses magnified the letters, the convex making them smaller.

This preference of concave to convex glasses is easy to explain, inasmuch as it is quite easy for the youthful hypermetropic eye to concentrate divergent rays upon the retina; but for the same eye to avoid accommodating, which is necessary in order to see with the convex glasses, is at first difficult and only to be obtained with a little practice. The tables for the convex glasses represent the number and degree of facultative hypermetropia in both schools.

Facultative Hypermetropes.

Age.	Boys 125.							Girls 164.						
	Numbers of Convex Glasses.													
	72	60	48	42	36	30	24	72	60	48	42	36	30	24
6				1	1					3	1			
7			1	2							2		3	
8			3	2	7	3			1	2	11	3	1	
9			4	3	2	1			1	6	6	5	2	
10		2	6	7	3	2				2	5	8	2	
11			2	2	5	4			4	5	5	3		
12	1	3	4	5	3	4			2	9	4	5	3	
13	1		2	4	2	2			1	1	6	6	2	
14		2	2	4	2			1	1	5	6	5		
15	1	1	5	4	1			1	1	4	4	5		
16	1	1	1	1		1			1	1	1	2		
17			1		1				1					
18				1					2	2				
19					1				1					
Total	4	9	31	36	28	17		2	16	40	51	42	13	
Per cent.	3.2	7.2	24.8	28.8	22.4	13.6		1.2	9.1	24.5	31.1	25.6	7.9	

Only the scholars with an acuity of vision of $\frac{20}{20}$ were tested with convex and concave glasses, and higher degrees of concave than convex glasses were accepted, as can be seen by the following tables, in which we omit the details and give only the general results:—

Age.	Boys 131.								GIRLS 167.							
	Numbers of Concave Glasses.															
	72	60	48	42	36	30	24	20	72	60	48	42	36	30	24	20
6				1	1				1		2	1				
7			1		2							2		1	2	
8			3	5	4	1	2				2	8	4	2	3	
9			3	3	3		1				4	9	7	2	1	
10			4	7	4	3	3				2	3	6	2	3	1
11			2	4	4	5	2			3	4	4	5	4		
12		1	2	6	4	3	3			1	4	5	6	4	2	
13		1	1	4	4	2	1	2			2	2	8	3	1	1
14		1	2	1	3		2		1	1	2	4	6	4	1	
15		1	2	4	4	1				1	2	3	5	2	1	1
16			1	1	1		1					1	1		1	
17							1			1	1					
18				1	1					2	1	1		1		
19							1			1						
Total	0	4	21	37	35	15	17	2	2	10	26	43	48	19	15	4
Per cent.	0	3	16	27.7	27.4	11.4	12.9	1.6	1.1	5.9	15.8	25.7	28.8	11.5	8.9	2.3

It will be seen from the following table of percentages that amongst boys 3 per cent. more in favour of the concave glasses were found, whilst there is only a difference amongst the girls of 0.4 per cent. in favour of concave glasses.

Scholars.	Convex Glasses.	Per cent.	Concave Glasses.	Per cent.
Boys 191	125	65.4	131	68.5
Girls 240	164	68.3	165	68.7
Total. . . . 431	289	67.	296	68.6

Each scholar was tested with one eye, then with the other; the second column shows the number of scholars who saw $\frac{20}{20}$ with convex glasses, and the fourth the same with concave glasses.

67 per cent. of the 431 examined presented facultative hypermetropia. Erismann found only 43 per cent., while Cohn found as high as 77 per cent. in *their respective* examinations.

The ophthalmoscopic examinations were made in the forenoon, and extended over a period of five weeks, during which time both eyes of the examiner were under the influence of a four-grain solution of *s. atropiæ* applied three times daily, so that the accommodation was completely paralyzed. Forty-nine of the apparent emmetropes refused to have their eyes examined with the ophthalmoscope any further, in some few cases the mothers not wishing it; the great reason was fear on the part of the scholars, and as we had not time to try and persuade them, they were lost to the ophthalmoscopic examination.

The following tables show the refraction of the scholars' eyes as tested with the ophthalmoscope. First column, ages; second, emmetropia found; and the following, the different degrees of hypermetropia:—

Hypermetropia.

Ages.	Boys 183.												Girls 194.							
	Hypermetropia.																			
	Em. ∞	$\frac{1}{80}$	$\frac{1}{36}$	$\frac{1}{30}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{17}$	$\frac{1}{15}$	$\frac{1}{14}$	$\frac{1}{13}$	$\frac{1}{12}$	Em. ∞	$\frac{1}{80}$	$\frac{1}{36}$	$\frac{1}{30}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{17}$		
6	1		3	2								2	1	2	1					
7	1		3		2				1				2	2	2					
8		4	4	8				1		1			3	8	3	1		2	1	
9	2		3	3	2	4	1	1	1	1	1		2	7	3		1	1	1	
10	1	2	7	4	3	1	1	1	1	1		2	6	5	5	2	4			
11	1	3	5	4	3	1	1	1						6	5	2	4		2	
12	4	4	6	6	1	2				1		2	1	8	5	2	1			
13	1	3	10	2	4			1	1			3	3	7	9	4	1	1		
14	2	7	4	2	3	1		1				3	5	5	4	2	1			
15	1	1	3	3	1			2				3	4	5	4	1	1	2		
16	1	1	4	2	1			1	1			3	2	3	2	1	1	1		
17	2		2	2								2	1	1	1					
18												1	1	2						
19			1									1	1	1						
Total	17	25	55	40	20	9	3	9	5	4	1	19	30	62	45	16	13	9		
Per cent.	9	13.4	29.3	21.2	10.6	4.8	1.7	4.8	2.6	2.1	0.5	9.8	15.5	31.9	23.2	8.2	6.7	4.7		

Percentages of Ophthalmoscopic Examinations.	Em. ∞	$\frac{1}{60}$	$\frac{1}{36}$	$\frac{1}{30}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{17}$	$\frac{1}{15}$	$\frac{1}{14}$	$\frac{1}{13}$	$\frac{1}{54}$	Total.
Boys . . . 188	9.0	13.4	29.3	21.2	10.6	4.8	1.7	4.8	2.6	2.1	0.5	100
Girls . . . 194	9.8	15.5	31.9	23.2	8.2	6.7	4.7					100
Total . . . 382	9.4	14.4	30.5	22.3	9.4	5.8	3.2	2.4	1.3	1.0	0.3	100

As is shown by the above table of percentages of the 382 apparent emmetropes, examined with the ophthalmoscope, only 9.4 per cent. were found to be emmetropic, whilst 90.6 per cent. were found to be hypermetropic.

The following table comprises the myopes in both schools, male and female; two more females were myopic than males :—

Myopia. Males and Females.

	$\frac{1}{48}$	$\frac{1}{36}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{15}$	$\frac{1}{12}$	$\frac{1}{8}$	$\frac{1}{7}$	$\frac{1}{4}$
6									
7									
8									
9									
10	1								
11	...	...	...	1	...				
12	...	...	...	...	...	1			
13									
14	...	...	1	...	...	...	1		
15	...	...	1	...	...	...	...	1	
16	...	...	...	...	1	...	...
17	...	1	...	...	...	...	1		
18	...	1	...	...	...	...	...	...	1
19									
Total,	1	2	2	1	1	1	2	1	1

The acuity of vision was tested in all cases, but we only make use of the 431 apparent emmetropes.

We believe Snellen's test-types to be the most reliable for distance. His xx can be read by young subjects very often at much greater distance, but taking it as a standard for average vision it is quite good. Very often xx of A series is incorrectly given; for instance, U is rendered as V, Y taken for T, C and G mistaken for O, and there are but few who see the figure 2 distinctly. All these letters have been changed in series E, new edition.

Acuity of Vision.

	$\frac{20-24}{20}$	$\frac{25-29}{20}$	$\frac{30-34}{20}$	$\frac{35-39}{20}$	$\frac{40-44}{20}$	$\frac{45-49}{20}$	$\frac{50}{20}$	Total.
Boys	126	35	22	3	3		2	191
Girls	189	28	18	3	1	1		240
Total	315	63	40	6	4	1	2	431
Per cent.	73.1	14.7	9.3	1.4	0.9	0.2	0.4	100

As can be seen by consulting the above table, 73 per cent. had a normal vision; not quite one per cent. had a vision of $\frac{4}{20}$, whilst the highest found was a vision of $2\frac{1}{2}$ or $\frac{5}{20}$. Still greater degrees of acuity of vision have been found by other examiners, but then they can be regarded as curious cases, and not for a moment to be taken as a standard.

Three cases classified under amblyopia as macula cornea presented a rather singular form of eye disease—hypertrophy of the limbus. All around the cornea at limbus an elevated ring extended, keeping as it were the sclerotic and cornea in position. This ring was grayish-white in colour, devoid of vessels, 3 mm. in width, and $\frac{1}{2}$ mm. to $1\frac{1}{4}$ mm. in height. In the sclerotic there were some fine vessels running towards the limbus, but they did not appear to penetrate into it. The cornea was quite hazy all around its circumference, and the haziness extended about 2 mm. towards its centre. (No colour blindness found among the scholars.)

During the examination of the scholars we found three cases of persistent hyaloid artery, two boys and a girl, and, singular enough, in the left eye of each. Considering the number of scholars in the two public schools examined, and the comparatively few cases on record of persistent hyaloid artery, the number is very large. Are we to expect to find more such cases in the coloured race than in the white? The three cases will soon be published in full. Should our results cause similar examinations of other coloured schools, we would consider ourselves amply repaid for our time and trouble.

ART. IV.—*Spinal Arthropathies.* By S. WEIR MITCHELL, M.D.,
Member of the National Academy of Sciences.

It has been my good fortune within the last two years to meet with a number of cases of disease of the joints of the legs, associated in each instance with atrophic states of limited groups of muscles, and offering more or less distinct clinical evidence of being due to spinal disease. I shall have occasion, as I proceed, to show how these cases differ from any as yet described, both in their early symptoms, and in their more favourable prognosis, but I shall perhaps make clearer my meaning, if first I call attention, however briefly, to the history of spinal and neural arthropathies, a subject which owes its best study to American and French students. The history of spinal arthropathies is well told by Charcot, in his *Leçons sur les Maladies du Système Nerveux*, Paris, 1872-73, p. 100 et seq. This author distinguishes joint lesions of spinal origin as of two varieties. Those which are acute or subacute and are accompanied with redness, swelling, and sometimes with more or less violent pain. The

second class he describes as chronic, of slow growth, and, as I shall point out, as being remarkably different from the first-named disorders.

The history of this subject is somewhat interesting, and the more so, because to an American physician belongs the long-forgotten credit of the first discovery that "an obvious spinal cause may produce a rheumatism characterized by heat, pain, redness, and tumefaction." The quotation is taken from the second paper on rheumatism by my father, the late Dr. John K. Mitchell. In his first essay he described cases of Pott's disease, in which, below the diseased region, there were acute inflammations of the joints, which proved amenable to treatment directed to the point of spinal lesion.¹ M. Charcot, *op. cit.*, p. 100-101, in acknowledging the first mention of these facts, adds, correctly, that this cause of arthropathies is rare, and, apparently ignorant of Dr. Mitchell's second paper,² says that traumatic lesions of the cord are more often the parent of joint disorders, and refers to Gull³ for instances of spinal commotion as competent to occasion a like result. Until in my work on injuries to nerves I recalled attention to the true author of this clinical discovery, Gull has usually had credit for being the first original observer of these interesting facts, while actually the credit is due to the American author. In his second paper Dr. Mitchell describes the very curious case of Dr. Parker of Elkton, Maryland, in Oct. 1831. This gentleman, who had previously had rheumatism, was thrown from his carriage, and, falling on his back, was instantly paralyzed slightly in his arms, but totally in his lower limbs. The next day he had swelling, pain, redness, and heat in the joints of the hands and wrists. These symptoms were thereafter aggravated by pressure upon the seat of injury in the spine, but relieved by the application of certain remedies to the spine. They shifted their place from joint to joint in the upper limbs, but did not affect the legs.

In 1846, Dr. Scott Alison⁴ described very clearly the arthropathies which occur in hemiplegia, but incorrectly ascribed them to the lithic diathesis under which he presumed his patients to be suffering, and to which he conceived all such cases must be due. Since then, Brown-Séquard, Charcot, and the author, as well as some others, have recalled attention to hemiplegic arthropathies. Like forms of joint disease have been seen in myelitis, and as results of spinal tumours, while in locomotor ataxia, Charcot has delineated with great fidelity a more chronic but not less troublesome form of joint disease.

According to Charcot, similar lesions have been seen in progressive muscular atrophy by Patruban, Remak, and Rosenthal, but I have been unable to procure the papers referred to. Finally in 1864, I described, in conjunction with Drs. Morehouse and Keen, the joint diseases caused

¹ Am. Journ. Med. Sci., 1831, p. 55. ² Am. Journ. Med. Sci., 1833, p. 360.

³ Guy's Hosp. Repts., 3d series, t. iv. ⁴ Lancet, 1846, vol. i. 227.

by injuries to nerve trunks, and again and again since I have illustrated anew this clinical sequence, by numerous reports of cases of manifold forms of nerve injury.

The pathological mechanism of the various neural arthropathies is clear only up to a certain point, beyond which all is as yet obscure. It has been made most probable, that all the spinal arthropathies are due to disease of the gray matter of the anterior cornua of the cord. It has been shown that this disease of the gray matter is not caused by the inertia to which some forms of spinal disease condemn the patient, and that neither in these cases are the peripheral nerves at fault. It has also been suspected that the cerebral arthropathies are caused by a descending sclerosis finally involving the anterior tracts of gray matter in the cord, but as to this I have a reasonable doubt, owing to the very early date at which I have sometimes seen joint lesions follow a cerebral hemorrhage, and to the suddenness of production, and the great generalization of the joint lesion in some of the same class of cases. It has been remarked that the joints swell from fifteen days to three months after an apoplectic attack, coincidently with the coming on of the "late rigidity," which we now commonly ascribe to descending sclerosis. I have, however, again and again seen the joint lesions come on earlier, and without any muscular rigidity, and I have also seen them get entirely and rapidly well, which does not look as if they could in these cases have been due to sclerosis. Thus in one case, they came on the day after an attack of left hemiplegia, in another on the third day.

The local peculiarities of most of the spinal and cerebral arthropathies are not such as enable the most acute clinical observer to distinguish them from some of the ordinary types of rheumatism, a fact which certain authors have frankly admitted. The general clinical characters, says Charcot, which differentiate them from common rheumatism of joints, are their limitation to the joints of the members afflicted with palsy, their relation in time to hemiplegia, the coexistence of other trophic troubles; but, if we begin by suspecting that some at least of our general rheumatisms may be of spinal birth, these would be only points in our favour, and the cases of Pott's disease in which remote joint lesions follow it, without palsies, would enable us to believe that such a spinal condition from disease might sometimes exist as would give rise to rheumatic joints without the concurrent existence of other troubles more palpably of neural origin. Moreover, it has occurred to me twice, to see cases of chronic rheumatism following acute rheumatism where an apoplectic attack produced a few days later an enormous exaggeration of the joint disease on the palsied side, so that there is something in the status of a palsied limb which favours the increase of an already present rheumatism.

Yet, however we may differ as to whether rheumatic fever be ever a spinal disease, all pathologists now admit the existence of joint disease

distinctly due to neural lesions, but as to the mechanism of the production of these arthropathies, we are still at fault. Our discovery of arthropathies caused by injury of nerve trunks, seemed to promise to make the research more simple, but as yet it has done little to aid us. It has been made clear, however, that in these, as probably in central lesions, they are due rather to irritative states than to absolute defects of power. It has been shown that they are caused neither by vascular palsies nor by vasal spasm, nor yet by inertia, which is, as we know, competent to cause, in limbs long at rest on splints, certain chronic forms of joint disease. I have certainly seen neuro-traumatic joint disease break out suddenly and with terrible severity within three days of a nerve lesion, which but slightly affected either motion or feeling, and which certainly gave rise to no atrophies, so that it also seems unfair to attribute them to defects of nutrition in this sense or in this direction.

I have elsewhere pointed out how curiously even very slight lesions of nerves affect the cutaneous secretions, and it seems fair to infer that disturbances in the chemical balances of the deeper tissues may likewise arise from as slight neural causes. How far these may also come from central disease, and how competent in either case they may be to trouble the life of the tissues and occasion local inflammations, we can hardly yet determine. It is but an hypothesis, yet of some value as giving a fresh direction to research. It is indeed hardly possible to refrain from speculation upon a subject at once so open and so interesting.

I have seen but one case of entire annihilation of nerve influence in a limb, and in this all the nerves were cut save the fibres which pass with the vessels. No notable joint lesions followed the section. The sections of single nerves never altogether insulate neurally a part even of a limb or lesser member,¹ but it is commonly the partial sections of one nerve which cause joint disease, and then arises this curious question: Do they act directly along the injured peripherally distributed fibres and thus affect the joint, or does the local irritation influence the centre, and through it and the still entire nerve threads act upon the joint to disorder its nutritive life? I incline to this latter opinion, which is favoured by various reasons, and especially by some of the cases I have elsewhere reported. But if this view be taken and we come to conceive of a state of the centres in which there were disturbance from without competent to put them in a state to cause joint lesions, we are readily made able to add another step in belief, and conceive that sometimes these centres may without peripheral irritations be thrown into such a state as to occasion these lesions.

Hitherto, in all of the reported cases of neural arthropathy, there has been a passive central or peripheral nerve lesion, and usually there have been also precedent symptoms not related to the joints, such as atrophy,

¹ Section of a nerve always leaves the joint in relation with other undestroyed branches.

paralysis, anæsthesia, or hyperæsthesia. In three of the four histories which I shall here relate, the joint lesion came first, existed alone for a time, and was followed by other nutritive, sensory, and motor conditions of the limbs, which revealed the spinal column as the organ upon which the whole chain of phenomena depended. Surely this is a fact of great pathological significance, since it is open to suspect that if the spinal lesion had been checked at a certain point we might have had only the joint disease, or such slight derangements in the way of numbness or lack of power as might readily escape notice, or as often are seen by acute observers in rheumatisms suspected by no one to be of neural birth. One possible fallacy may exist to mar this view of the pathogenesis of some arthropathies, and to it I shall by and by refer.

CASE I.—Mr. B., of E. Pennsylvania, consulted me last year in the autumn, on account of a painful affection of the right knee-joint. Mr. B. was a bank officer, æt. 48, of slight figure, free from previous disease, and of untainted descent. In the spring of 1873 he was subject to severe mental and moral strain, and for some weeks to unusual exertion a-foot. In June he had slight pain in the dorso-lumbar spine, which was eased by rest. The accompanying sense of lassitude left him after a short summer holiday, but early in September he began to have pain and swelling and stiffness in the right knee, and at length was forced to remain at rest, the knee having been put in a splint. Despite pretty active treatment it grew worse, and he was led to consult me in November.

At this time the leg presented nothing abnormal save in the joint. There was no wasting, no loss of feeling or of electrical reactions. I advised absolute rest, pressure by sponges and bandage, tonics, and moderate doses of iodide of potassium. The joint was hot and largely swollen, the patella lifted by effusion, and the pain severe especially at night. He came back to the city within a month. At this time there was pain and slight tenderness on the right of the eighth and down to the twelfth dorsal vertebra inclusive, an aching sense of distress over which ice caused a feeling of burning. The joint was in all respects better, but still swollen slightly, red, and painful and tender. The thigh and leg presented a curious change. The extensor group in the thigh was wasted at least one-half, the peroneal and gastrocnemial groups were similarly altered, but to a less degree. All of these muscles were much enfeebled, and responded only to galvanic currents of at least thirty cells, and best to ascending currents. The sensibility of the skin of the leg below the knee was much impaired, that above the knee but slightly lessened.

I was amazed to find so remarkable a change in so short a time, and was fortunate in having made previously so complete an examination as to feel sure that when first I saw the case the joint lesion stood alone.

For a few days I enjoined rest, with cut cups thrice to the spine. The local relief was great, and although no other treatment was then employed, a change for the better was seen at once in the joint. After a time I began to treat the knee with powerful galvanic currents, and the muscles with reversed galvanic currents. The most rapid improvement followed, and after thirty sittings I found that I got ready responses by induced currents which were thenceforward used every day. The splints were early laid aside, slight movement permitted, and when only some feebleness of gait remained, I employed hypodermic injections of strychnia.

After three months Mr. B. went home well. He has since had a short relapse, with a display of all the same symptoms in a lesser degree, but the same treatment readily overcame them, and a course of cod-liver oil and iron, with some changes in his ways of work, has sufficed to preserve him in health up to this date.

CASE II.—My second case was a woman, æt. 32, from Wilmington. She was at the head of a busy millinery business, and had been in good health, and free from pain. In the spring of 1873 she began to have pain in the left knee-joint, and after suffering some months, gradually grew more and more feeble as to the use of the left leg. In the autumn she applied to me, and was then in a pitiful state of pain and lameness. The joint was enormously swollen, and very painful, as well as most curiously tender. The temperature was two degrees above that of the right knee, and the patella could be rocked on the distended joint. To my surprise, the whole anterior group of extensors of the leg was wasted at least one-half, and could not be stirred by the will or by any form of current, galvanic or induced, nor yet through the nerve trunks.

The sensibility was, however, unimpaired. The back was free of tender spots, the general health fair, but not vigorous, and there was no functional disturbance of stomach, kidney, or generative organs.

I treated this case as I had done the other, by galvanism until induction currents acted, and thenceforward by these latter. The general treatment consisted in the use of tonics and full doses of strychnia. The gain was sudden and steady, so that I was able, after a few weeks, to leave the case in the hands of my friend Dr. John K. Kane, of Wilmington, under whose charge she continued to improve, so as within a few months to be entirely well.

It is, of course, possible that both of these cases may have been joint troubles originating without neural cause, and producing by reflected irritations muscular losses; or more directly giving rise to an ascending neuritis competent in time to occasion like results. The nerve tracks, however, were searched again and again in both cases for tenderness, and always in vain, while the spinal symptoms of the first case seem to have been distinct, so that, on the whole, I reached the conclusion that in both there was a limited spinal lesion, and if so in both (and here is their peculiarity), the joint disorder came first, and for a time stood alone.¹ The next case as to the spinal birth of which no shadow of doubt can exist, enables us to feel far more sure that the two cases first given had also this origin. It has also this added value, that it was seen and studied by others besides myself, none of whom had finally any other view.

CASE III.—The subject of the following most remarkable history is the wife of a physician of distinction in a neighbouring city—a woman of unusual energy and intelligence, and previously in good health.

On April 18, 1870, she first felt a slight sense of lameness in the left knee. It caused annoyance in going up or down stairs, in sitting or kneeling, far more than in walking. On the 23d an examination revealed

¹ The very remarkable wasting of muscles in some joint diseases, as of the hip, seems to be due to reflected irritations and not to mere inertia, but these wasted muscles usually react under electric currents as well as their healthy fellows.

the presence of too much fluid in the bursa, and on the 24th the joint was distinctly swollen, and there were slight pains at times down the inside of the leg. The knee had gained in one day three-fourths of an inch in girth. So great was the tension and pain, that on the 25th absolute rest was ordered, and leeches were applied. The bleeding continued too long, and seemed to cause unusual feebleness, but on the 26th the inflammation was much lessened. Stimulants were used internally, as she seemed singularly weak, and wet cold was applied locally. A day or two later dry cold was used, and the knee was found to be easy if at rest, but very painful when stirred or even handled.

On May 9th for the first time in trying to move the leg, which by this was much more free of pain, Mrs. B. noticed a want of power to lift the limb, or to change its place from side to side. The extensors, abductors, and adductors were enfeebled.

At this time the leg was put on a gutta percha splint, and kept on it two weeks with compression to the knee by sponges and bandages, while locally iodine was used.

On June 1st Dr. J. H. Brinton asked me to visit Mrs. B. in consultation. At this time there was some pain in the lumbar spine—not a very definitely fixed pain—and there were slight twitches in the thigh muscles above mentioned, and also in the peroneal group—this symptom being worse at night and very disturbing to the patient—as they sometimes moved the patella so as to give pain.

On April 24th the knee measured $14\frac{1}{2}$ inches; and during June it continued to be 13 inches. The other measurements will, by and by, be mentioned; they showed at this time remarkable atrophy of the whole limb, but chiefly of the anterior groups of muscles, and there was entire loss of power to lift the leg or even to stir the extensors, or to move the part laterally; yet the joint was vastly better, and indeed quite free from pain, a slight roughness being present when it was bent. The gain took place under use of cod-liver oil, iron, shampooing, and induction currents, which at this time failed to stir the disordered muscles. The temperature of the limb had fallen ever since the loss of power began, but, with the improvement alluded to, the limb throughout became warmer.

July 1. The foot could be rested on the floor with the knee in half flexion, and July 15th could be voluntarily raised from the floor a little, while extended.

17th. Mrs. B. was carried out of town, and finally spent the summer at the sea-side, continuing her treatment with daily sea-baths.

During July she walked on crutches, and on August 25th was able without crutches to walk a few steps, though not without limping and pain in the knee. Meanwhile the gain as to temperature, power, and nutrition continued, and the sensibility, never wholly lost, became decisively better.

Sept. 5. I saw her on her return. She could now walk about one-fourth of a mile on crutches.

The measurements were as follows:—

	Over patella.	3 inches above patella.	8 inches above patella.	4 inches below patella.	8 inches below patella.
June 3, 1870.	13	13	16	$10\frac{1}{4}$	$10\frac{1}{2}$
Sept. 16, 1870.	$13\frac{7}{8}$	$14\frac{1}{2}$	$17\frac{1}{2}$	$11\frac{1}{2}$	11
June 3, 1870. Ankle,	$6\frac{3}{4}$.	Sept. 16, 1870. Ankle,	$6\frac{3}{4}$.		

During the autumn the improvement went on, and in Nov. Mrs. B. could walk a few yards without aid, but both in the winter and through

the last summer it was curious to see how all of the symptoms fluctuated almost from day to day.

Early in the winter the other knee began to suffer, and precisely the same set of symptoms were seen in the right knee and leg, save that the loss of sensation was not so considerable. I had now, of course, no longer any remainder of doubt as to the spinal origin of this most interesting case.

With varying fortunes Mrs. B. passed through the winter, the joints becoming worse at times and again better, but every new onset of arthritic trouble being followed or accompanied by increase of atrophy, loss of power and sensation, and the limbs being liable to notable alterations in temperature.

June 1, 1871. Mrs. B. saw Dr. Brown-Séquard, to whom I wrote an account of her case. Under his advice she took iodide of ammonia and strychnia in increasing doses, and with these aids and steady sea-bathing became vastly better, and in the fall could walk a mile without aid. The limbs now showed a new increase in size and firmness, sensation was almost perfect, and the joints free of pain. The winter brought, as before, some return of trouble, but not to the same extent as in the last winter.

April 1, 1872. Dr. Brown-Séquard met me in consultation, when, except the use daily of ice rubbing for the knees, no change was made.

The summer of 1872 was spent at Cape May, with the usual good effects. In Oct. Mrs. B. was able to walk about in-doors and out much as other women, all of her untoward symptoms having disappeared. In 1873 she went to Pittsburg to reside, and while there had no further annoyance until Jan. 1873, when she had a most curious and instructive attack of the old symptoms, accompanied with general feebleness, and the appearance of an eruption of herpes, which, originating on the left shoulder under the left arm, passed over the left chest. The eruption was very painful, and lasted about ten days. I did not see her in this attack, but Dr. Benham, her physician, has been so kind as to give me a full description of this incident of the case. Previous to the attack there had been some causes of weakness. The palsy and knee troubles passed away under use of oil and strychnia, and now, except as to power to kneel or stoop readily, Mrs. B. is perfectly well.

In this remarkable history of joint lesions, atrophic palsy preceded by twitching of the muscles, dysæsthesia, and altered thermal conditions, we have all the needed evidence to show that there was a central cause, and that this was a local myelitis of the spinal cord. Its clinical value lies in the fact that the joint disease distinctly preceded the remaining symptoms.

I have met with other examples of spinal disease producing arthropathies, but in all of them the spinal malady existed for long periods before it gave rise to arthritis. These histories, therefore, will teach us nothing new, and I pass on to the last, and perhaps the most remarkable of my cases. In November of last year, Dr. Bolling, of Chestnut Hill, asked me to see with him a case which had been looked upon as mere rheumatism, but which Dr. Bolling had rightly concluded to be of neural origin.

CASE IV.—The patient, Eliza M., æt. eight years. When six years of age, in May, began to complain of pain in both ankles, and to turn the feet under her in walking; braces were applied with no relief to the pain, and they were at length removed. The trouble, nevertheless, grew better, to reappear the following spring, with pain both in the ankles and wrists. Then suddenly the toes swelled at their joints, becoming red, tender, hot, and stiff. Within a few days the ankle-joint also became intensely inflamed, and finally the whole of both feet. Neither the knees nor the hands became inflamed. As the diseased joints grew better, which they did very rapidly during six weeks at the sea-shore, the feet were found to drag in walking, although after a time she became quite well and even active. During each of these attacks, the peroneal and anterior tibial muscles and the interossei of the feet became singularly wasted, and after each onset all of these muscles underwent within a few weeks the most amazingly rapid repair. The hands passed through like changes, but their joints became stiff, and a little rough and enlarged, without any pain, and the interossei, the thenar group, and the extensors exhibited the same speedy wasting, and the same as sudden and remarkable restoration, but in all the attacks this revival left them not quite well nor fully active, so that after each return of disease there was a slight addition to the permanent disability.

As to the latest attack, in November, 1874, I got a better account. The child when seen by me was healthy looking, cheerful, and bright. About November 10th, she began to drag the feet unusually. Then a few days later, she had nausea, and occasionally sick stomach, which endured for a week, whilst meanwhile pain appeared in the leg and in both feet, together with intense pain, heat, redness, and great swelling of all the joints of both feet. The pain was very great, and the tenderness on motion distressing; Dr. Bolling thought that taken alone, no better illustration of acute rheumatism could have been found.

The joints of the hands underwent their usual changes, becoming deformed without pain. When I first saw her in November, the appearances described were lessening in severity, but the atrophies were well marked.

Dec. 10, 1874, Dr. Bolling met the patient at my house, when I made with his aid the following careful notes of her condition. The hands present good types of the "claw hand." The first phalanges are drawn back in extreme extension, the second and third phalanges flexed. The interossei wasted the first most notably. The thumb nails look directly upwards, so as to be on the same plane as those of the fingers, owing to wasting of the whole thenar group of muscles. The palm is flattened. All of the joints are large and stiff. These peculiarities Dr. Bolling tells me nearly altogether disappear between the attacks. The feet are cold, 85° F., bluish and congested. The joints have already lost almost all traces of disease, and are only a little stiff and swollen. The intrinsic muscles of the feet and the flexors of the feet are wasted, but the extensors of the feet, normal as to size, are slightly contracted in tonic spasm. The toe nails are curiously and deeply indented by numerous transverse furrows, probably marking interruptions of growth.

All the foot extensors are palsied, but there is still feeble power to flex and extend the toes, and extend the feet. The interossei of the hand and the extensors of the wrist are very weak, the common extensor of the fingers weak, the flexors all healthy.

Sensation as to touch, pain, localization, and temperature everywhere normal.

The electrical conditions were interesting. A galvanic current (interrupted and reversed) of 60 cells did not move the flexors of the feet, nor was it capable of moving the gastrocnemius which yet responded to volition. Powerful induced currents also provoked in these parts no reaction. Induced currents moved the third, fourth, and fifth interossei of the hands, and best on the right side, but did not stir in either hand the first, second, and third interossei or the thenar group, save only the ulnar adductor, and this feebly. The extensor group in the arms reacted badly under induction currents.

There seemed to be no other muscular loss or defect, and the heart, kidneys, stomach, and special senses were normal.

The symptomatology of this case of course allies it with progressive muscular atrophy, from which, however, it is set apart by most obvious clinical peculiarities.

It is said that an elder sister died of the same disease, and I ought to add that both parents are unusually healthy people.

The last case of my series is in many points different from the others, but more especially in the oddity of the hand symptoms. Apart from this portion of the case, it resembles, save in the acuteness of attack, the three others; but in it the loss of power preceded the arthritic symptoms. In the others there was joint disease of painful character, followed by atrophies, loss of power, and change of temperature, while in one only was there also loss of feeling. In all, the changes were rapid, the cure of the wasting, and palsy speedy and complete.

ART. V.—*On the Palsies of Children.* By WHARTON SINKLER, M.D.,
Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases, and to the Episcopal Hospital, Philadelphia.

DURING the past four years I have had the opportunity of seeing, at the Infirmary for Nervous Diseases, 140 cases of paralysis in young children. Besides these there were a number of others where the diagnosis was doubtful, or the notes of which were incomplete. I have, therefore, thought it best to omit them. Were these cases included, the total number would be much greater.

The 140 cases are divided as follows:—

" Essential infantile paralysis"	. . . . .	86
Pseudo-hypertrophic "	. . . . .	2
Hemiplegia . . . . .	. . . . .	23
Rachitic paralysis . . . . .	. . . . .	6
Facial "	. . . . .	2
Diphtheritic "	. . . . .	2
Congenital "	. . . . .	2
Reflex "	. . . . .	2
Syphilitic "	. . . . .	2
Traumatic cerebellar paralysis . . . . .	. . . . .	1
Paralysis following spinal meningitis . . . . .	. . . . .	5
" " cerebral meningitis . . . . .	. . . . .	3
" " cerebro-spinal meningitis . . . . .	. . . . .	1
" " myelitis . . . . .	. . . . .	3
		<hr/> 140

I do not propose to go into any scientific discussion in regard to the etiology and pathology of the various forms of paralysis above mentioned. I shall simply give the practical points as to diagnosis, treatment, etc., as they presented themselves in the cases at Dr. Weir Mitchell's and my own clinics.

The so-called essential infantile palsies being the most numerous and the most important, I shall consider them first.

Many names have been given to this form of paralysis, Rilliet and Barthez, Niemeyer and others, calling it the essential paralysis of infancy. Hammond terms it organic infantile paralysis; and Meigs and Pepper, modifying the name given it by Duchenne, of fatty atrophic paralysis, call it atrophic infantile paralysis.

As will be seen by reference to the text-books, infantile paralysis has been recognized since the end of the last century, but it is only within a few years that it has been fully understood and separated from the other forms of paralysis met with in children. Indeed, even some recent writers have failed to make the distinction. West, in his table of 43 cases, has recorded several instances of facial paralysis, and a number of hemiplegias of cerebral origin; and Meigs and Pepper have referred to these very cases as examples of the disease under consideration. It is by no means an easy matter to diagnosticate infantile paralysis, for although the symptoms are generally distinctive, cases often occur which resemble the disease in many particulars, but in other important features differ.

I shall briefly recall the well-known characteristics of this disease.

The affection generally occurs in a strong, healthy child, between six months and two and a half years old. The patient may have had fever, usually in the latter part of the day, accompanied by vomiting during the night, or for twenty-four or forty-eight hours preceding, and in the morning is found to be paralyzed in one or more limbs. Or the loss of power comes on suddenly without any sickness having been noticed. Occasion-

ally it occurs in the course of, or as a sequel of measles, scarlatina, or hooping-cough. If both upper and lower extremities are affected, the former soon recover power, often by the end of a week. The paralysis in one or both legs persists, or slowly mends, and it is six months or a year before the child begins to walk again. There are usually no convulsions or loss of consciousness; nor is there paralysis of the bladder and rectum. In most cases there is more or less soreness to touch, or pain in the back on movement, and for several days the little patient will cry out when lifted. There is no loss of sensation. The palsied limbs soon begin to waste, and as the sound limbs grow they become larger and longer than the affected members. In some this difference in size is very great, the paralyzed limb seeming almost rudimentary. Even where the length of the limb rests unaltered, we sometimes find that the foot or hand of the diseased side is shortened.

If the patient is seen six months or a year after the attack, the affected limbs are found cold, shrunken, and atrophied. There is a mottled appearance of the skin, which seems adherent to the subcutaneous cellular tissue. On pinching up a fold of the skin it does not seem loose, as in the healthy limbs, but seems to cling to the deeper structures.

The loss of power is more or less complete; sometimes it is only a single group of muscles that is palsied. Should the whole limb be affected, it is relaxed and limp, the ligaments of the joints being also lengthened. There is never any contraction of the muscles as is seen in cerebral palsies. There is often shortening of some muscles in a limb, producing deformity; but this is quite different from the contractions just mentioned, being a true shortening of the muscle, owing to the position which the limb has assumed, or from the muscle acting while its opponent is palsied, and not a spasm of the muscles, which can be overcome by force, or which at times relaxes spontaneously. Adams (*Club Foot*, p. 83) refers to this shortening of the muscle as the "adapted atrophy of Paget," and expresses his own belief that there is no active contraction of the muscle. According to Duchenne, electro-muscular contractility to the induced current is not affected in the paralyzed limbs during the first few days, but afterwards they rapidly lose the power of responding to this current. Galvanism, however, continues to cause good muscular response even when faradism fails to produce the faintest movement.

The following is a well-marked example of infantile palsy:—

Joseph R. L., aged four years, was brought to my clinic November 18, 1874. Only child; father died of kidney disease, but mother is living and healthy; is a robust, healthy-looking boy, with light hair, blue eyes, and sound teeth. When fifteen months old he was walking and in good health, except that he was teething. One day in July he was seized with vomiting and fever, which lasted three or four days; at the end of that time he was found to be completely paralyzed in both legs. He had no convulsion, and there was no loss of power in the bladder or rectum.

During the time that the fever lasted he seemed to be unconscious, but screamed when lifted or handled. In two weeks the right leg regained entire strength, but the left did not improve, and for a month he was weak and feeble.

Present State.—There is no difference in the length of the legs, but the left foot is one-quarter inch shorter than the right. The right leg is strong and well developed, the left is small, flabby, and cold. There is absolute loss of power in all the muscles from the hip down, except in the flexors of the leg, in which there is slight movement. He can walk without assistance, but the leg is simply swung around, and when he bears any weight upon it there is great recurvation of the knee. The measurements of the leg are as follows:—

Left leg,	3 inches above the knee,	8½ inches in circumference.
Right "	3 "	10 "
Left "	2 inches below the knee,	6⅜ "
Right "	2 "	8 "
Temperature of the sole of the left foot,		69°
" " " right "		73°
" " calf of the left leg,		74°
" " " right leg,		84°

These temperatures were taken in a room where the thermometer stood at 70°.

The muscles of the left leg give no response to a strong induced current, but fifty cells of the galvanic battery produce good contractions of the paralyzed muscles.

From the difference in mode of onset of the affection, Dr. Mary Putnam Jacobi¹ has divided the cases into several classes. The first class is where the disease comes on suddenly, without premonitory symptoms, and where the child is under competent observation. Of such Dr. Jacobi found but twelve of one hundred and sixty-three cases she had collected. There are six instances in my table.

The second class is where the paralysis is discovered in the morning after a quiet night. Six of our cases have this history. Among these may be included three cases in which the paralysis came on between morning and evening without any apparent sickness, the actual onset not having been observed.

The third form is, in my experience, the most common. It includes those cases in which the palsy has been preceded by fever, "beginning in the evening and lasting all night, or else for two or three days."

There is also nearly always vomiting or nausea, and some pain on being moved. These latter symptoms are not mentioned by Dr. Jacobi, but other authors speak of them as being common. Thirty-four cases in my table are of this nature.

In the fourth class the paralysis is preceded by convulsions. Dr. Jacobi found four out of thirty-seven cases which she examined in reference to this point. In but three of our eighty-six cases did it occur, and there was one in which fits followed the loss of power.

¹ American Journal of Obstetrics, June, 1874.

In the fifth form the paralysis comes on in the course of a convalescence from another disease. Eleven of our cases were of this class, and I have not included two or three in which the palsy came on in the course of hooping-cough, for they were accompanied by the usual symptoms, and the complication of hooping-cough seems to have been accidental.

A sixth class is made by the author already quoted, where vomiting alone precedes the palsy. I do not think this can be made a distinct class, for it is most probable that in these cases the fever has been overlooked by the parents, who are often unobservant. In three of our cases it was stated that there had been vomiting without fever.

A seventh form is where "some mechanical injury has occurred." I must take exception also to this decision, for there is no proof that a fall which the child has sustained a week or perhaps a month before the paralysis, can be regarded as the cause of it. In several of our cases was there an account of a fall, which had taken place days or weeks before the palsy occurred, and which had caused no pain or difficulty in walking at the time. In only one instance was the paralysis said to have immediately followed the injury, and here the history was not to be taken as reliable, for the patient was not seen until fourteen years afterward.

In the eighth form the symptoms are markedly spinal in their character. There is opisthotonos, hyperæsthesia, and bladder trouble. Five of our eighty-six cases belong to this class. In none of them, however, was there any paralysis of the bladder. Dr. Jacobi gives a case of this kind in which there was retention of urine for eight days, and insensibility to the prick of a pin for two days, and very justly remarks that this case resembles lumbar myelitis, and I think it is not entitled to be recorded as a case of infantile paralysis.

The ninth class of this author really belongs to the cerebral palsies.

I shall make another class, in which the loss of power comes on gradually, without previous fever or sickness being observed. Three of our cases were of this nature.

One, a child, at the age of thirteen months, was strong and healthy, and running about. One evening his mother noticed that in standing on her lap his legs gave way under him. He had seemed as well as ever during the day. That night he did not move about in bed as much as usual. The next day he walked about, but was rather unsteady upon his legs. The day following, when he was put in his cradle, he began to scream violently, and it was then found that he was palsied in all of his extremities. For some days he had "screaming spells," but did not become unconscious, and his mother thinks he had no fever. In three weeks he began to use his arms. When seen at the Infirmary for Nervous Diseases, at the age of two and a half years, there was loss of power in both legs below the knee, and pes equinus on both sides.

The cause of infantile paralysis is acknowledged by all writers to be obscure. Sex seems to have no influence on the affection. Of the eighty-

six cases which came under my observation, forty-two were males and forty-four females. Vogel¹ says that more boys than girls are affected.

The disease, as I have already stated, is most likely to occur between the ages of six months and three years. Of our cases but three were paralyzed at six months and under. Between six months and one year there were nine cases. At one year and under two there were forty-one cases. At two years and under three the affection occurred in twenty instances. At three years and under four there were seven cases. From four to five there were three cases. From five to six it occurred only twice; and from six to seven there was but one case. We therefore see that between six months and three years seventy of the eighty-six cases were palsied.

Adams remarks that the occurrence of the palsy seems to be connected with the first dentition. There certainly is at this time an extreme degree of susceptibility to impressions in the nervous system. It is in the "second summer," however, that most of these cases of infantile paralysis occur. This period is well known as a most trying season for children in this country, and it is then that so many die of convulsions, "summer complaint," and marasmus.

I observed, two or three years ago, that many of our cases of infantile palsy were said to have been attacked in the summer months, and since then I have carefully noted the time of year when the paralysis came on in each patient. In fifty-seven of the eighty-six cases in which this point is recorded, I found that two cases occurred in March, one in April, one in May, eight in June, eleven in July, nine in August. In twelve instances it was simply stated that the child became paralyzed in the summer. Six cases were in September, five in October, one in December, and one in the fall. This shows that forty of the fifty-seven cases were affected in the summer months; and if we add the seven which took place in May and September, which are generally hot months in this city, we find that all but ten of the fifty-seven cases occurred in hot weather.

This fact has not, to my knowledge, been remarked before, and seems to me to have much bearing upon the causation of the disease. At any rate, it is evident that hot weather must have a marked influence in predisposing to the affection.

Dr. G. S. Gerhard, in a paper on chorea, in the *Phila. Med. Times*, Feb. 3, 1874, has remarked that that disorder is more liable to occur in the spring than at any other season.

Nothing is known of the exciting cause. West² mentions two instances in which paralysis of the leg seemed to follow sitting on a cold stone step. Niemeyer justly remarks that this idea "is unworthy of attention, as innumerable children sit daily upon the stones, while essential palsy is not a common disease."

¹ Diseases of Children.

² Diseases of Children, p. 199.

In some cases one of the exanthems seems to have been the exciting cause, but in others absolutely none can be detected.

As to the frequency with which the various parts are affected, of our eighty-six cases, when first seized, in twenty-three both legs alone were palsied, in fourteen the right leg alone, in thirteen the left leg, and in two the left arm alone, in twenty-two instances all the limbs were paralyzed, in four the right arm and both legs, in four the left arm and left leg, and in four the right arm and right leg. I may here remark that Niemeyer¹ asserts that in this disorder we never find both extremities on the same side of the body paralyzed. These statistics disprove the statement, for although, in some of the eight cases in which the arm and leg on the same side were affected, the parents may have been mistaken, in one of them the child was seen by me in less than a week after the onset of the palsy, and it was clearly limited to the members of one side.

In fifteen of our cases both legs were affected at the time the patients were brought to the clinic. In twenty-nine the right, and in thirty-three the left leg was paralyzed. In one case the left thigh alone, in three instances the left, and in one the right arm alone, in two the right arm and both legs, in one the right hand and both legs, and in one the right arm and right leg were palsied.

Of fifty-nine cases examined in reference to deformity of the feet, in twenty-five there was none. In seven there was valgus, in twelve equinus, in eight varus, in four equino-varus, in one equino-varus of one foot, and calcaneo-valgus of the other, in one valgus of one and equinus of the other foot, and in one contraction of the plantar fascia.

Mr. Adams (*loc. cit.*) gives the following order of frequency in which groups of muscles are affected: 1. The muscles of the anterior part of the leg forming the extensors of the toes and flexors of the foot. 2. The extensors and supinators of the hand, these muscles being always affected together. 3. The extensors of the leg, and with them generally the muscles of the foot as in the first group. When single muscles are affected the most likely to suffer are these: (a) The extensor longus digitorum of the toes. (b) The tibialis anticus. (c) The deltoid; and (d) The sternomastoid. I suppose the author refers to the cases as they presented themselves to him some time after the palsy, for it is very rare for a single muscle, or group of muscles, to be paralyzed from the first. Generally the whole of one or more limb is affected at the onset, and recovery may then take place in all but one muscle or a group. In only one of our cases did a single group of muscles seem to have been palsied from the beginning.

The temperature of the affected parts is always much depressed. In one of my cases there was a difference of six degrees in the temperature of the two legs, and in another ten degrees.

¹ Text Book Practical Medicine, vol. ii. p. 339.

The palsied limb, failing to grow with the same rapidity as the sound member, soon becomes smaller, and this arrest of growth takes place in the foot as well as in the leg. This fact is not spoken of in any of the text-books which I have consulted, and my attention was first called to it by Dr. Mitchell at one of his clinics. The difference in the length of the feet is almost always present, and is important as a diagnostic feature.

In one of our cases, a man, who was seen at the age of forty, there was two inches difference in the length of the feet.

There has been the greatest difference of opinion as to the morbid anatomy of the disease; one set of writers holding that the affection is wholly peripheral, and without any organic change in the nerve centres, while others claim that there is a true lesion of the spinal cord. At the present day those holding the latter view are by far the most numerous, and there has been a sufficient number of post-mortem examinations made in which spinal lesions have been discovered to sustain them in their belief.

Dr. Jacobi, in the paper already quoted, has collected twenty-six autopsies in cases of infantile paralysis, by far the greatest number that have been yet reported. Of these there are but seven cases in which negative results were obtained, and in three of these no microscopic examination was made. In the remaining nineteen cases in which lesions were found in the cord, the morbid changes were of various characters, from congestion of or hemorrhage into the cord, to microscopic alterations in the nerve cells of the antero-lateral columns. Besides these cases I may add three more autopsies which were reported by Dr. R. M. Bertolet in a paper read before the Pathological Society of Philadelphia, and published in the *Phila. Med. Times* for Nov. 7, 1874. In each of these cases there were found "profound alterations in a great number of the motor cells and disappearance of others."

In addition to the changes in the nerve cells there has frequently been found sclerosis of the antero-lateral columns.

The researches of Lockhart Clarke, and Charcot indicate that it is in the cells of the anterior cornua of the cord that we must look for the most constant changes in this disease.

The suddenness of the paralysis would seem to indicate congestion or hemorrhage, and these theories have been advocated by able writers, the first by Brown-Séquard and Radcliffe, and the latter by Clifford Albutt. Mr. Adams (*loc. cit.*) says "it appears probable that local congestion of the nerve-centres or nerve-trunks, accompanied in some instances with effusion, which subsequently becomes absorbed, are the only lesions in many of the slight cases."

I must acknowledge to having had a strong leaning to the congestive view, but there are many points of dissimilarity between the phenomena of spinal congestion and infantile paralysis. These are given at length

and in tabular form by Barwell.¹ Moreover, it seems to have been demonstrated by recent writers that the nerve-cells of the cord are capable of undergoing changes, which at first may be functional, but may terminate in organic lesions of the medulla.

Hillier, writing in 1868, before the more modern discoveries of changes in the motor nerve cells of the cord were made known, says: "The atrophic paralysis of infancy may be regarded as, in all probability, an affection of the spinal cord, and especially the anterior and part of the lateral columns." And there is no reason for us at the present day to dissent from this opinion.

Besides the changes in the cord there are important alterations in the paralyzed muscles themselves. These consist in fatty degeneration, with disappearance of the muscular fibres. Hammond² denies that this degeneration takes place in every case of infantile palsy, and relates two instances in which the disease had lasted over four years, and in which he had found the muscular structure unchanged.

Prognosis.—The result of our experience at the Infirmary for Nervous Diseases is that this depends upon the length of time that the patient has been palsied when seen. If a child is brought to us within a few weeks after the onset of the paralysis, we feel justified in giving a partially favourable prognosis; but if the disease has lasted months and even years, it is useless, in the majority of cases, to expect to restore power to the paralyzed muscles. These are atrophied to an extreme degree, and have undergone such extensive fatty degeneration that but few muscular fibres remain. Under these circumstances how can we hope for any restoration of muscular power? The prognosis as to usefulness of the lower extremities, however, may almost always be favourable, for by proper treatment the limb may be strengthened, and, with the aid of suitable apparatus, the patient can be enabled to walk.

The following case is an illustration of the good results that may follow treatment in a case of long standing, in which we might have anticipated fatty degeneration of the palsied muscles. So we should be careful in forming our opinion even as to return of muscular power in cases of long duration.

The patient, a little girl of 5½ years, was brought to one of my clinics fifteen months after having been paralyzed. She had been perfectly well until four years of age. One evening while riding in a carriage she complained of pain in the back and head. That night she was feverish, and the following morning there was found to have occurred paralysis of the left arm and leg. The loss of power was not complete, but she was utterly unable to walk or even to stand. The arm regained power rapidly, but it was three months before the leg was strong enough for her to walk even with a crutch. Up to six months ago the leg gained power steadily

¹ St. Thomas's Hospital Reports, N. S., vol. i. p. 201.

² Diseases of the Nervous System, p. 695.

until she was able to walk with a cane, but since that time no improvement has taken place.

Sept. 22, 1872. The child has no power in the flexors of the left thigh. The abductors lift it slightly upwards and forwards. She cannot flex or extend the left leg, but can flex and extend the foot and toes. There is atrophy of the thigh and calf, but no difference in the length of the legs. The left foot, however, is a quarter of an inch shorter than the right, and is cold.

A strong induced current does not move any of the muscles of the left leg except the anterior tibial group, and the interossei of the foot. The galvanic current moves all of the muscles. There is some loss of electro-muscular sensibility. Ordered faradization of the leg three times a week.

Oct. 11. The patient has had treatment, as directed, with regularity, and there is great gain. She is able to lift the thigh somewhat, and to flex the leg. The temperature of the foot is better. All of the thigh muscles now respond to the primary induced current, but the solens and gastrocnemius do not. The same treatment was continued, and in addition daily shampooing of the leg was ordered.

30th. Improvement continued in every respect. Patient walks better and has more of the leg movements. After this date her parents ceased to bring her to the clinic, as they lived a long distance from the city.

In this case it would seem as if the paralyzed muscles had recovered their tone, but could not be brought under the control of the will until electricity had brought them again into action.

Another point of interest in the case is the fact that the foot muscles were intact, while those of the leg and thigh were paralyzed. Vogel¹ asserts that "paralysis of the arm, without involving the muscles of the fingers or hand, occasionally occurs, but the reverse of this condition has never, to his knowledge, been observed."

Diagnosis.—Although I take it for granted that all of my readers are well acquainted with this disease, I would suggest a few points of importance in its diagnosis.

First of all, the paralysis occurring in a child previously healthy after slight indisposition and feverishness, and there being no convulsion or loss of consciousness.

The excellent state of the general health in this affection is very striking.

Almost all of the children who are brought to our clinics at the Infirmary for Nervous Diseases, suffering from infantile palsy, are remarkable for their fine, healthy appearance, whereas those with cerebral paralysis are rachitic or scrofulous in the majority of cases.

There is no paralysis of the bladder and rectum. In but one of our cases was there any urinary difficulty, and in but one want of control over the contents of the rectum.

The electrical condition of the muscles has always changed. There is always failure to respond to the faradic current to a greater or less extent.

¹ Diseases of Children, p. 392.

This is a most important diagnostic feature, for in the cerebral palsies there is no alteration in electro-muscular contractility.

The fact that the paralysis has occurred in hot weather, or in the course of, or convalescence from measles, scarlatina, smallpox or typhoid fever, should also be considered as bearing on the diagnosis.

Treatment.—This depends, of course, upon whether the case is recent or of long duration. If the patient is seen immediately, or within a few days after the attack, leeching or counter-irritation to the spine may be used, especially in those cases where there is spinal pain or tenderness. Iodide of potassium may be administered with advantage. If the child is teething, and the gums are swollen, lancing them is indicated. In one of my cases incising the gums seemed to be of service.

The patient was brought to one of my clinics within a week after an attack of paralysis of the left arm and leg. She was fourteen months old, and had been walking.

Seven of the incisors and one molar had been cut, and another molar was pressing up the gum. The gums were freely lanced, and iodide and bromide of potassium were ordered. After taking but one dose of the medicine a lumbricoid was passed, and a few doses of calomel and santonine were therefore given, with the effect of expelling two more worms.

After two or three weeks electricity and shampooing were employed.

The improvement was quite rapid, and in two months the patient could move both arm and leg freely.

When the paralysis is of some duration electricity in the form of galvanism is a most useful agent in its treatment. Duchenne has found faradization of value, but experience has shown that the form of electricity which is of the most service is that which causes muscular contraction in the paralyzed limb. In this disease a slowly interrupted galvanic current of moderate intensity will move muscles which are not stirred by the strongest faradic battery.

Shampooing and manipulating the palsied limbs are of the greatest value. By these means the shortened muscles are relaxed, the adherent integument is loosened, and the nutrition of the whole limb is improved. The degree to which the temperature is elevated by manipulation, is evidence of its usefulness.

In order to test the relative power of galvanism and manipulation to increase the warmth of a limb, I took the temperature in a case of paralysis of the arm in a child three years of age. The difference between the palms of the two hands was 5° . Galvanism elevated the temperature but $1\frac{1}{2}^{\circ}$, while by manipulation the temperature in the palm of the hand was raised 8° , and in the bend of the elbow 10° .

The manipulation referred to should be done by one who understands the method; but any intelligent person can readily be instructed in its application. It consists in friction of the surface of the limb and kneading of the muscles.

It has often been observed that when the paralyzed limb is warm the patient has much more power to move it than when it is cold. This fact suggests a point in treatment, namely, the application of heat to the affected parts. This may be done either by immersing the limb in hot water before manipulation or by subjecting it to dry heat. A good plan is to have the arm or leg held before a hot fire for a few minutes every evening.

Strychnia is always serviceable in these cases, but I have never seen striking results from its use. Barwell¹ gives some cases in which remarkably beneficial effects followed the hypodermic use of this agent. I tried it faithfully in two cases, but without the least benefit. One of the patients was under treatment for a long time, but the other had only six or eight injections of the strychnia.

Apparatus should be used to correct deformities, and to enable the patient to use an otherwise helpless member. The appliances should be of the lightest possible character, and made to avoid interference with the movements of the limb.

One thing of the most extreme importance, and which should be impressed upon the parents of the child from the beginning, is, that the means which are to be used will have to be employed for a length of time, and that it is needless to treat a case only for a short period.

In some of our cases, which seemed to be of the most unfavourable character on being admitted to the wards, the greatest improvement has taken place from using daily treatment by the means referred to for long periods, and, in addition, applying suitable apparatus. Children who have been admitted entirely unable to stand, have, after several months' treatment, been discharged, walking readily with the aid of apparatus.

We use at the hospital a wheel-crutch, which enables the patient to exercise the legs even when he cannot stand. The arrangement is made so as to support the body under the arms, or, if necessary, by the perineum also, and is very light and easily moved. Some contrivance of this kind is essential in the treatment of these cases.

I regret greatly being unable to furnish any statistics as to the results of treatment in our cases; but all who have had experience in dispensary practice know how impossible it is to induce patients to attend with regularity for any length of time.

Cerebral Hemiplegia.—Of the twenty-three cases of this disease, ten were males and thirteen females. Twelve were left, and ten right hemiplegia; and in one instance the left arm alone was said to have been paralyzed. It is probable that in this case also there was complete hemiplegia at the beginning, which was not observed.

The age at which the attack occurred was from three months to eight

¹ Lancet, 1872.

years. In three instances the hemiplegia was apparently the result of the use of the forceps in delivery; and in two other cases it was congenital, and due probably to some defect in cerebral development.

In these cases, almost all being seen at remote periods from the attack, it was difficult to determine the exact cause of the paralysis. In many it was most likely that cerebral hemorrhage had been the lesion, and in two instances, one of which occurred in the course of scarlatina, and one some months after that disease, the hemiplegia was evidently the result of embolism. Four of the patients had been subject to fits, and, after a severe convulsion, the paralysis of one side had been observed. In most of them there had been feeble health, or some predisposition to cerebral disease, such as rickets or hydrocephalus.

In one case it was difficult to determine if the hemiplegia was due to hemorrhage, the result of an injury to the head, or to inherited syphilis:—

The patient came to my clinic August 10, 1874. She was seven years of age, and had always been healthy. There were five brothers and sisters, all older, who were also healthy. The mother had been treated by Dr. W. S. Stewart, who sent the child to the hospital, for secondary syphilis. Four weeks ago the patient fell against the corner of a marble door-step and received a deep wound over the right eyebrow, the scar of which remains. She was not insensible at the time, but has complained of pain in that location ever since. Two weeks ago her mother noticed that the face was drawn to the right side, and that there was slight loss of power in the left arm. She still walked well, however. She now lost appetite, and the voice was not as clear as usual. In a day or two the leg became weak, and in two days more the foot was dragged to a marked degree, but the leg never lost power completely. The arm has been steadily growing worse.

Present state.—Patient walks with but little difficulty, although the leg is weak. The left arm is completely powerless, except slight ability to elevate the arm. The left side of the face is paralyzed, but there is no ptosis or squint, and the tongue is protruded straight. Over the right eye there is a scar about a half inch long, but there is no depression in the bone, and pressure over it causes no pain. For the last few days there has been some nausea and vomiting. There is no cardiac disease.

Eye-ground.—Veins of right fundus are larger than those of left, but otherwise the disk is normal. Sensation unimpaired. All the muscles respond to a mild induced current. Ordered potass. iodid. gr. ij t. d.

August 17. Improving, but fingers of left hand are disposed to contract.

26th. Has quite good movement of the arm, but fingers are contracting more. The leg has entirely recovered.

In this case it would look as if the injury to the head had been the cause of the paralysis, but it is difficult to conceive how hemorrhage can have gone on for two weeks without producing any symptom but headache. On the other hand, if the lesion was syphilitic, *e. g.* a gummy tumour, why was there no greater disturbance of the eye-ground, and why had there been absolutely no previous indication of the disease? And also, if we would account for the improvement which took place under

the use of iodide of potassium, on the supposition that there had been a syphilitic growth which was absorbed by the remedy, why did the contractions of the flexors of the fingers increase instead of diminishing?

In all of the cases there was well-marked contraction of the flexors of the paralyzed limb, and no loss of electro-muscular contractility; and from these facts we may clearly locate the lesion in the brain.

A notable feature in these cases of cerebral hemiplegia is the retardation of growth in the paralyzed limbs. This was observed in all of our cases which were seen long enough after the attack for any change to have taken place. In the case of a girl who had been paralyzed at one year, when she came to Dr. Mitchell's clinic at the age of seventeen, the left arm was two and a quarter inches shorter than the right. The left leg was one and a quarter inch shorter, and the foot one and a half inch shorter than the other. Complete restoration of muscular power had taken place, except slight rigidity in the flexors of the arm from contraction.

Electro-muscular contractility to the induced current was perfect. The patient was said to have had water on the brain in infancy. After a sickness of four weeks she had a slight convulsion, followed by insensibility for several hours. On recovering consciousness there was found to be left hemiplegia. In only two of the right and one of the left hemiplegias was there any difficulty in speech. In two or three of the cases there was decided mental deficiency.

The fact that in childhood hemiplegia may give rise to excessive wasting and to check of growth in the length of the limb was first noticed and commented on at our clinic two or three years ago by Dr. Mitchell. It marks a singular difference between the hemiplegias of adult life and of childhood.

Rachitic Paralysis.—This condition is described by several writers as pseudo-paralysis, and is said never to be complete. Under the head of hemiplegia I have included a well-marked case of rickets, in which there was left hemiplegia, with contraction of the flexors of the arm and absolute loss of power in the forearm. Besides the enlargement of the epiphyses there was a large "soft spot" in the skull at the parietal protuberance.

Of our six cases, two were males and four females, and the age at which they were seen varied from twenty-nine months to six years. In all of the cases there were decided evidences of the rachitic diathesis, and the want of muscular power had always been present from early infancy.

Hillier¹ says, there is sometimes in rickets great want of muscular power, simulating paralysis, and this symptom may be quite disproportionate to the signs of rickets in the bones or elsewhere. The gradual

¹ Loc. cit., p. 266.

accession of muscular weakness, the other marks of rickets, especially in the bones, and the diffused and at the same time incomplete character of the paralysis, should prevent one from mistaking such a case for infantile paralysis.

The following case well illustrates the characters of this affection:—

Florence B., æt. 3 years, was brought to my clinic April 22, 1873. She is one of seven children, and is small for her age. The next oldest child has very much bowed legs.

At the age of three months she had “cholera infantum,” which lasted all summer, and she was greatly reduced thereby.

Present state.—Has all of her teeth, which are well preserved except the incisors, which are decayed. The anterior fontanelle is still unclosed. The epiphyses of the radii are enlarged, the ribs are beaded, and the tibiae are bent. The legs are small and flabby, especially below the knee, and the ligaments are much relaxed. The body is immensely fat. The patient has every movement of the legs, and can stand with assistance, but when the aid is withdrawn she falls immediately.

She moves from place to place in the sitting position, using the feet and hands in locomotion. Her general health good, and she sleeps well.

Electro-muscular contractility fair. She was admitted to the hospital, and ordered cod-liver oil fʒj t. d. and syr. calcis lacto-phosph. fʒj t. d. The legs were to be manipulated and faradized alternate days. At the end of three months she walked unaided very well. She was then sent to the Children's Hospital at the sea-shore, and became strong and active by the end of the season.

Dr. Parry,¹ in the *post-mortem* examination of a rachitic child who had suffered from pseudo-paralysis, and who had died at four years old, found the spinal cord, brain, and nerves quite healthy, although the muscles of the leg were pale and flabby.

Pseudo-Hypertrophic Paralysis.—That this is a rare affection is shown by the fact that we have met with but two instances of it at the Infirmary for Nervous Diseases, and in one of these the diagnosis was somewhat doubtful, for the patient was seen only during the early stage of the disease. The other case was reported at length by Dr. Weir Mitchell in the *Photographic Review of Medicine and Surgery*, vol. ii. p. 1.

I will give a *résumé* of this patient's history.

Robert P., æt. 8, applied at Dr. Mitchell's clinic September 12, 1871. Mother died of cancer, and the father has been treated by Dr. Duhring for a tubercular syphilide. Brothers and sisters healthy. When he began to walk his gait was unsteady, and it has grown worse; is a stout healthy-looking boy, with a rather ruddy complexion; height, 3 feet 9 inches; weight, 45 pounds; has never had fits or any illness. On being stripped the following appearances are presented. There is an anterior curvature of the spine in the lumbo-dorsal region. Abdomen is large and prominent, circumference of waist 20½ inches. The spinal curvature is owing to the position assumed by the patient in order to keep his equilibrium; arms and hands normal, but the lower limbs are enormously developed from the groins down. The skin of the extremities is mottled.

¹ Am. Journ. Med. Sci., Jan. 1872, p. 51.

Largest circumference of left thigh, 13 inches.

"	"	" right "	12 $\frac{3}{8}$	"
"	"	" left calf,	10 $\frac{1}{2}$	"
"	"	" right "	9 $\frac{7}{8}$	"

When asked to lie down he throws himself forwards on his hands, then "falls into a heap." To raise himself he first gets on elbows and then on hands, next by successive efforts he draws feet up under the pelvis, then straightening up he climbs his own legs with one hand on each thigh, and at last with effort balances himself upright. Walks plumping his feet down and rolling his body from side to side. There is no loss of electro-muscular contractility or sensibility. Urine normal.

On April 23, 1872, seven months later, the following notes were taken:—

Circumference of right thigh, 15 $\frac{7}{8}$ inches.

"	" left "	15 $\frac{3}{8}$	"
"	" right calf,	11 $\frac{1}{4}$	"
"	" left "	11 $\frac{1}{2}$	"

These measurements show a great increase in the size of the legs. The arms have also increased, but not in the same proportion. The muscles have all acquired greater hardness. The thighs are more mottled, and there is a rose-coloured eruption on the neck and chest, which fades when exposed to the air. He can no longer get up unaided from the floor.

The patient was last heard of about a year ago, and the loss of power continued to increase.

Facial Paralysis.—We met with but two instances of this out of the 11 cases. One was in an infant of eight months, and was the result of scrofulous abscesses of the ear and neck. The other was in a girl of about nine. The paralysis occurred in infancy, and was not traceable to any cause. There was absolute loss of power in all of the muscles of the right side of the face, which are fed by the seventh nerve, and there was considerable atrophy. All of the muscles responded readily to the induced current, showing the peripheral character of the palsy. A long course of faradization failed to improve the condition of the facial muscles.

The two cases of *Diphtheritic Paralysis* presented no unusual features, and were relieved speedily by faradization and manipulation.

Of the two cases which I have called *Congenital Paralysis*, one was a child seen at the age of three years, and in whom there was complete palsy of the right arm.

The mother stated that at birth the right arm was shrunken, and not more than one-half the size of the left. The child was delivered by the forceps, but it is not likely that these were the cause of the paralysis, for there was no sign of external injury, and when the patient was seen by me, there was no contraction of the flexors in the affected limb. Moreover, the paralysis and atrophy were evidently from one and the same cause.

The muscles of the right arm all were easily moved by the faradic current, and by the use of this agent there was great gain in power.

The other case was one of paralysis of the right leg which had existed from birth.

Reflex Paralysis.—One of the cases was a girl of three years, and the palsy was apparently excited by an attack of pneumonia. There was incomplete paraplegia, and the child cried violently whenever put on its feet. There was also bad prolapse of the lower bowel and constant straining at stool. Dr. Mitchell prescribed liq. morphiae sulph. gtt. xij t. d., and under its influence the child rapidly recovered.

The paraplegia in the other case was probably due to phimosis. Circumcision was recommended, but I do not know if my advice was followed.

Syphilitic Paralysis.—One of these cases is of so much interest that I will transcribe it from our note-books in full.

A. M., æt. 22 months; when six weeks old slept for five days and nights, and on arousing was found paralyzed in the whole right side. The face was not affected, but the head was drawn to the right side. There was never complete loss of power in the arm. The patient gradually regained power and became able to walk. Two weeks before coming to the clinic he lost power to walk.

Condition when seen April 4, 1871. There is no difference in the length of the legs, but the right is shrunken and the right foot is three quarters of an inch shorter than the other, and the soles of both feet are dry and shrivelled. There are two tumours the size of a buck-shot in the right popliteal space, and one in the soleus muscle as large as a walnut. There are many other such growths scattered over the body. On the legs is a copper-coloured eruption, and the teeth are decaying around the roots. The general appearance of the child is that of good health. He is quite unable to stand. Under the belief that the tumours were syphilitic gummata, and that the paralysis was caused by a tumour or some syphilitic degeneration of the cord, Dr. Mitchell prescribed iodide potassium, gr. iij t. d.

On April 8, just four days later, the patient returns wonderfully improved. He is able to stand alone, and the tumours are lessened in size.

One month later he was able to walk a little, and by July 11 he walked well, and the tumours had disappeared entirely.

In the other case, a child of two years, there was left hemiplegia with contractions. The child also had fits. The mother presented unmistakable evidences of secondary syphilis. Under the use of the iodide and bromide of potassium combined, the fits were greatly diminished in frequency, and power returned to such an extent that the little patient began to walk.

Spinal Meningitis.—Three of the five cases were idiopathic and were characterized by opisthotonos, violent dorsal pain and hyperæsthesia followed by paralysis of the limbs, and in one case there was paralysis of the bladder. The other two cases were the consequence of caries of the spine, and were more or less associated with myelitis.

Myelitis.—In all three cases of this affection there was caries of the spine.

In one of them, a patient of Dr. Mitchell's, a girl of eleven years, with great antero-posterior curvature of the spine, there was total loss of power in both lower extremities. Moving the legs caused sudden spasm of the anterior crural group of muscles. The muscular spasm could also be produced by the prick of a pin. Sensibility was lessened in the foot, and

there was slight analgesia. The muscles responded excessively to faradism and not at all to the galvanic current.

The patient was admitted and placed at complete rest in bed. Leeches were applied to the spine twice a week, and cod-liver oil administered. Electricity was also ordered. Under this treatment the patient improved with astonishing rapidity, and in a month could move the legs freely. At the end of three months she walked about unaided.

Cerebral Meningitis.—In one of these cases there was hydrocephalus. The fronto-occipital diameter of the head was $22\frac{1}{2}$ inches and the bi-parietal nine inches. The child was twenty-two months of age when brought to my clinic. She talked and was intelligent, but was cross and slept badly. There was general loss of power, the child being unable even to sit up.

In another there had been all the symptoms of an acute attack of meningitis, and when seen there was general muscular enfeeblement without absolute palsy.

ART. VI.—*On Syphilitic Affections of the Lachrymal Apparatus, with Observations upon a Peculiar Syphilitic Lesion of the Caruncles.*
By R. W. TAYLOR, M.D., Surgeon to the New York Dispensary, Department of Venereal and Skin Diseases; one of the Physicians to Charity Hospital, New York.

It is, no doubt, owing to the rarity of the occurrence of certain of the varieties of the syphilitic affections of the lachrymal apparatus, that no accurate and particular description of them has, as yet, been published. Since the appearance of the monograph of the younger Lagneau,¹ in which these affections were treated in a somewhat inexact and incomplete manner, some of his cases being very doubtful in origin, and others but imperfectly marked and loosely reported, no formal attempt has been made to fill this void thus left in surgery. Though both Lancereaux² and Zeissl³ devote sections to them in their text-books, yet they do not include all of the varieties. Ophthalmological writings also are equally, if not still more limited in scope; so that there is no reliable guide to the knowledge of these affections. It is to supply this want, therefore, that I purpose, in a concise and I hope clear manner, to trace the clinical history of the affections of the various parts composing this apparatus. Attention once being prominently called to their existence, the literature of the sub-

¹ *Maladies Syphilitiques consécutives des Voies Lachrymales.* Archives Générales de Médecine, May, 1857.

² *Traité Historique et Pratique de la Syphilis*, Deux édition, pp. 386 and 387, Paris, 1873.

³ *Lehrbuch der Syphilis.* II. Theil. Zweite Auflage, pp. 217 and 218. Erlangen, 1872.

ject will no doubt thereafter be increased materially by the publication of new cases. I shall, in the main, base my statements upon my own experience; but in one or two instances I have, from lack of observation, to supply the want by using the cases of others. The chief value of this contribution consists in the recital of two cases which develop the history of an affection very rare and consequently but little known, it being a gummy infiltration into the caruncles. In going systematically though briefly over the subject, I necessarily include some observations already in a measure familiar to many, but I have done so for the sake of completeness, as by thus doing a general view of the whole subject is given in one article. The chief portions of the lachrymal apparatus are the glands, the sac, canaliculi, nasal duct, and caruncles. In the greater number of cases, these parts are involved in syphilitic inflammation by its extension from neighbouring tissues; but in some rare instances the focus of the affection is seated primarily in one portion of them. They are found to be affected both in the secondary and in the tertiary stages of syphilis; and while in the former the morbid process is of a hyperæmic or catarrhal character; in the latter, they are the seat of gummy infiltration, and of inflammation of a severe and chronic form resulting from specific necrosis of the bones in immediate connection. We will consider the affections of the several parts in succession.

Syphilitic Affections of the Lachrymal Gland.—The only recorded instance of a case of syphilitic inflammation of these glands is that reported by Chalons¹ of Luxembourg. The anatomical structure of these bodies is such as to render them very liable to the syphilitic processes, yet they seem in the vast majority of cases to escape.

The case alluded to was that of a person in the first year of his disease, having lesions of an exanthematous character, and an iritis. Coincidentally, these glands were observed to become swollen, and their increased size was very perceptible as they pushed the upper lids forwards. The gland of the right side was much more tumefied than its fellow, and caused the eyelid, which was slightly reddened, to drop down over the eye as in the affection named ptosis. There was no pain, and the symptoms were of a mild character. The appearance of the person is described as being very peculiar. The swellings subsided under the influence of a mercurial treatment.

As this tumefaction occurred early in the secondary period, the lesion was undoubtedly of an hyperæmic character, similar to that which attacks the pharynx and tonsils in the same stage of the disease. The diagnosis of such swellings will always depend on the history of the case, and perhaps on the coexistence of other syphilitic lesions.

These glands may perhaps be affected in the tertiary state by gummous infiltration, though such a case has not as yet been recorded. In this

¹ Adenitis Lacrymalis Syphilitica. Preuss. Vereins Zeitung, No. 42, 1859, and quoted by Lancereaux.

event the swelling would undoubtedly increase slowly and painlessly, and either both glands or but one might be involved. The diagnosis would be arrived at by a history of the case, and perhaps the presence of other lesions or of their sequelæ might assist.

The Affections of the Canaliculi, Sac, and Nasal Duct.—It may be stated with much positiveness that these canals are never the primary seat of syphilitic inflammation. Not frequently being affected, when they are thus, it is simply by the extension of inflammation from adjacent structures. Thus the canaliculi and sac become the seat of a catarrhal inflammation in consequence of congestion of the conjunctival mucous membrane continuous with them; by its extension through the nasal duct from the Schneiderian membrane, and by the occlusion of the lower part of the duct. In the latter event, as the secretions do not escape, they become decomposed and are highly irritating. Not only are these parts involved in the secondary period, but also they become affected by tertiary affections of neighbouring parts.

The inflammation of the upper portion of the canal and of the sac, which I have said is of a catarrhal character, varies very much in its severity. Being coincident with and dependent usually upon a conjunctivitis, which generally complicates inflammation of the intraocular structures, it is usually of temporary duration, consisting in a swollen condition of the mucous membrane, which under treatment of the original lesion soon ceases, without leaving any trace. Sometimes the tumefied condition of the parts is so great that temporary epiphora is produced, but usually it disappears rapidly. Not occurring in every case of intraocular trouble, when it does it is not important, and fistula lachrymalis does not result from it. In rare cases the orifice of one or of both of the canaliculi may become slightly ulcerated, but in most cases there is no distinguishing feature of syphilis to be observed. These parts, however, may be the seat of very severe chronic inflammation attended with the development of fistulæ and other annoying symptoms of dacryocystitis. Such cases are dependent on great destructive change in the bony walls, which surround or are in the neighbourhood of the canal. Owing to neoplastic growth late in syphilis, necrosis of the orbital process of the frontal, of the ascending process of the superior maxillary, or even of the lachrymal bone may occur, as a result of which there is compression of the upper part of duct and of the sac, and their function is wholly destroyed. This condition is a formidable one, and is attended with very considerable disfigurement. The sinuses which communicate with the dead bone are the seat of inflammation, which extends to the canal, already the seat of inflammation from compression, and they may even open into the sac itself. During the period of activity of these necrotic changes, much pain is felt, and the inner angle of the eye is greatly swollen and very red. The process is generally slow, and in the end there is sometimes much loss of tissue. In

some cases the syphilitic inflammation in the bones is not complicated with degenerative changes, in which event the inflammation in the sac, which at its height may have been active, subsides with the involution of the bony enlargement, and finally the parts are left intact. I had such a case, in which, among other nodes about the head, there being one on the other border of each supra-orbital foramen, there was a well marked swelling involving that portion of the ascending process of the superior maxillary which articulates with the lachrymal bone, encroaching on a portion of the latter. When this swelling had become large, being raised nearly half an inch above the normal plane of the bones, the sac was very much compressed, its function being abolished, and there was moreover much hyperæmia of the parts. The eyelid was pushed out, and the caruncle was very red and prominent. I feared that it might be permanently injured, but under an active treatment the swelling slowly grew less until finally it was all absorbed, the canal remaining uninjured. In such cases if the inflammation is of very long duration, there is much reason to fear stricture or occlusion of the parts in consequence of the walls becoming attached to one another.

In those cases in which there is considerable necrosis, all of the delicate structures at the inner angle of the eye may be involved in ulceration, by which the sac, duct, and portions of the canaliculus are wholly destroyed; after the healing of the parts has taken place, a cicatrix is formed which greatly disfigures the countenance. The case which forms the text of this description presented peculiar features.

A man seven years syphilitic, in whom large ulcerating gummata communicated with extensive areas of necrosed tissue of the tibia, finding that his rest was prevented at night by pain at the inner angle of the left eye, noticed in a short time a swelling under the skin, which increased very rapidly and with it the soft parts at this site soon participated. As a result of a dissipated life, very soon an extensive ulcer formed, from which a small portion of dead bone was extruded; this led him to seek advice, and his case came under my observation. At that time a funnel-shaped ulcer of syphilitic appearance, which had begun two months and a half previous, was seen at the inner angle, and from it an unhealthy sanious secretion escaped. As the edges of the integument were everted and thickened, the ulcer presented the appearance of being very deep. I ascertained with a probe that dead bone was situated at its bottom and on its sides. Under treatment, local and constitutional, the parts healed slowly, as in four months a depressed radiating cicatrix was formed, which drew the lids inward, producing a permanent epiphora.

In other cases an ulcer of this size might not form, there being perhaps only a trifling sinus, in which event the sac might escape permanent disorganization. Under all circumstances, considering the gravity of these sequelæ, bony lesions of these parts should be treated in an active manner, in order to avert these possible consequences.

Passing now to the lower end of the duct, we find anatomically its

lining membrane to be continuous with that of the nose, and that thin plates of bone form a part of its wall, while other similar structures are in the immediate vicinity.

Now, in secondary syphilis, hyperæmia and ulceration very often attack this membrane, while in tertiary syphilis, both ulceration of the mucous membrane and necrosis of these bony plates frequently occur. In all of these processes, the nasal duct may be involved; in some instances in a mild ephemeral manner; in others with so much severity that the lumen of the duct is destroyed. When in syphilis the Schneiderian mucous membrane is affected, the hyperæmia extending to the duct may be of such a mild nature that no objective symptoms are produced, or the hyperæmia may be very active, the soft tissues of the walls of the duct may be very much swollen, even to the point of ulceration, or, again, to the production of large quantities of pus, and the development of shreds of a fibrinous membrane similar to that which is falsely called diphtheritic when observed about the fauces. In this state the symptoms are very well marked. The inflammation may extend up the duct and involve the superior portions, or above the inflamed part, which, by the excessive tumefaction of the membrane, is impermeable, secretions mixed with pus stagnate, thus involving the whole apparatus in severe inflammation. This condition, even when very serious, may be but temporary, while under proper treatment perfect resolution may take place. Or, again, fistula lachrymalis may occur, which, however, will yield to treatment, unless adhesion takes place between the membranous walls below. This condition is usually observed late in secondary syphilis, only occurring in a very small proportion of cases. I have been very much surprised, in some cases of hereditary syphilis in which the ulceration of the nose was very severe, that the nasal duct should have escaped. The possibility of the occurrence of the inflammation of this duct and of its sequelæ should be borne in mind, and should lead practitioners to institute a local treatment very early in the event of inflammation of the Schneiderian membranes.

But in the tertiary stage and late in hereditary syphilis, the affections of this duct are of much gravity. In some cases in which the inflammation results from extension from an adjacent ulcerated surface, the condition may be of the mild and ephemeral character already described. But there are others in which structural changes occur which are serious in their results. In such a case the ulceration of the mucous membrane of the nose, which in this stage is deep and destructive, may invade that of the canal, which may be rendered finally impervious by the contraction of the cicatrices. During the progress of this lesion the symptoms of inflammation of the duct and of its occlusion will be observed. When the lower part is thus closed by cicatricial tissue, a fistula then almost inevitably forms.

The same result sometimes follows when that portion of the inferior

turbinated which forms the lower part of the wall of the duct is destroyed by necrosis, or when the bones composing the wall higher up are thus affected. In this event the symptoms of the obliteration of the duct are soon developed, which go on until a permanent occlusion is produced. The cases in which this condition is observed are those in which the bones of the nose have been for a long period seriously affected. They are very severe in character, not only by reason of the great distress induced by the disturbance of the function of the parts, but also by the severe pain which sometimes accompanies the process. I recall to mind a woman, the subject of hereditary syphilis, who suffered for years with frequently recurring attacks of necrosis of the nasal bones, which, in spite of active local and constitutional treatment, relapsed in a distressing manner, only ceasing when the greater part of the bony plates had become necrosed and were exfoliated. Also, the case of a man suggests itself, who had fall of the nasal bones, severe protracted necrosis of the turbinated bones, and as a result fistula lachrymalis of both sides.

In all of these instances, it will be seen that the inflammation of the lachrymal passages has been secondary to that of other tissues. We have no recorded instance of syphilitic inflammation beginning primarily in the canal, and it is probable that it never does. It would be rather difficult to establish this fact under any circumstances, owing to the inaccessibility of the parts to ocular inspection.

Little need be said of diagnosis in these cases, as the processes when simply ulcerative present no distinguishing features, and their nature is to be determined chiefly by the history of the case, in each one it being well to suspect syphilis. When necrosis occurs it may, as a rule, be considered syphilitic without any fear of mistake. The treatment should be directed to the cure of the trouble in the nasal cavities, with appropriate measures for that of the lachrymal passages.

It may be interesting to be known that the chief end of Lagnean's monograph is to describe the fistula lacrymalis which follows necrosis of the bony walls of the upper part of the canal. He reports several cases, but they show no new points.

Syphilitic Affections of the Lachrymal Caruncles.—The description of the syphilitic affections of these structures is as yet wholly unwritten, for I have not been able to find a recorded case or description of such.

These little glandular bodies are affected in both secondary and tertiary syphilis. In the secondary stage they are congested in an ephemeral manner by the extension of the hyperæmia of the conjunctiva, which we have already seen sometimes involves the punctæ and canaliculi. Like the affection of these latter structures, that of the caruncles is equally mild and of temporary duration. But in the tertiary stage they may be profoundly implicated. In consequence of nodes of the subjacent bones they are sometimes pushed out of place, then becoming red and tumefied. In this

condition, in which we have found the sac to be sometimes seriously involved, the caruncle may be the seat of inflammation which has originated in the sac. Even when this condition has been quite active, resolution may occur, the integrity of the body being finally restored. But in some cases of this kind, when contraction and adhesion of the walls of the sac follow protracted inflammation due to the subjacent pressure, the caruncle becomes implicated and in the end is atrophied, its glandular structure being then lost, and being replaced by cicatricial tissue. In the cases already considered in which necrosis supervened in the nodes, the sac and with it the caruncle was destroyed. This happened in the case above cited. In all of these instances, however, the inflammation was secondary to that of other parts.

The two cases which follow show an entirely different condition from any which we have thus far studied. They distinctly prove that the caruncles may be primarily involved by syphilis without the implication of other parts. This affection, as has been said, has never been described before; hence these cases are very important. Previous to considering its nature I will give the histories of the cases presenting it.

Carlos G., American, aged twenty-nine, harness-maker, became syphilitic in the latter part of 1865, having a chancre which was followed by a general rash, buccal mucous patches, and rheumatoid pains. His strength became very much reduced, and rapidly becoming emaciated, his health was profoundly affected. He took medicine during the following year with irregularity, being under the care, at varying periods, of a number of physicians. The debilitated condition into which he had fallen continued, and during this year his chief visible syphilitic manifestations were superficial ulcers of the dorsum and sides of the tongue, and severe pains in his joints. Early in the year 1867 he experienced a more profound condition of ill-health and debility, and about the same time he had a general eruptive eruption over the body and extremities. Around the margin of the hairy scalp, upon the forehead, a string or line of syphilitic tubercles developed. They were slightly elevated, quite broad, of a coppery hue, and the seat of slight epidermal exfoliation. Prior to that outburst of syphilitic lesions, he had married, and his wife became syphilitic through a labial chancre. She, some months after, was delivered of a child, which I was called to treat for syphilis; its lesions were palmar and plantar pemphigus, an extensively distributed ecchymatous syphilide and distressing coryza.

In the fall of 1868 the husband noticed, almost coincidently with his syphilides, that a swelling or tumour appeared at the inner angle of each eye. The closure of the lids was rendered slightly difficult, but by causing the orbicular muscles to contract with a little more than ordinary force, the patient was able to coapt them. The secretion from the eyes passed over each cheek. Upon examination, a swelling of each caruncle was found. This little body (the description of one being sufficient), was enlarged to fully four times its normal size, being of a pyramidal shape. When the lids were firmly closed, the end of each caruncle stretched beyond them fully two lines. The colour was of a slightly deeper red than normal, and the surface of the body was not at all raw, and rather glazed in appearance; in short, there was no ulceration whatever. The neighbouring con-

conjunctiva was slightly redder than natural, but there was at no time any other abnormal secretion from it other than a small piece of desiccated pus which was found in the morning after sleep. The patient informed me that he occasionally experienced a slight sensation of itching in these bodies, causing him to rub them. As a result the conjunctiva often became very red, but the trouble always disappeared rapidly. On some occasions he bathed the eyes with cold water to allay the irritation.

To the touch each caruncle appeared composed of a firm tissue. Though sought for with care, no lesion of the subjacent bones was discovered, it being evident that the morbid changes were strictly limited to the caruncle alone. My diagnosis was gummous infiltration into these bodies. It is important to add that the patient had never suffered from any affection of the eyes, nor had he had any trouble of the Schneiderian membrane.

At the earnest advice of friends, who argued that an affection of the eye should be treated only by a specialist, he placed himself under the care of an ophthalmologist. This gentleman regarded the case as one of cancerous degeneration of these appendages, advised an operation, which, being consented to, was performed by him. The amount of tissue extirpated must have been quite large, and to cover up the resulting gap the skin above and continuous with the lids had been slid downwards, meeting a small flap from the side of the nose and cheek. The result was that the patient exhibited a hideous appearance. At the inner end of each lid was a veil formed by this plastic operation, which covered over nearly an inch of the sclerotic as far as the margin of the cornea. The patient still suffered with epiphora, which was then rendered incurable, and his cutaneous lesions still persisted. I learned that no inquiries had been made as to his condition, nor had he been placed upon an internal treatment. It is well to add that previously Dr. Willard Parker had concurred with me in my opinion of the syphilitic origin of the various lesions. The patient, being greatly dissatisfied with the result of the operation, expressed himself freely to that effect. He returned under my care in February, 1868. I placed him upon the mixed treatment, using the following prescription: Bichloride of mercury, one grain; iodide of potassium, four drachms; syrup of the iodide of iron, one ounce; simple syrup and water, of each one and a half ounce; besides this he took cod-liver oil freely. The crusts of rupia were removed carefully, and the ulcers thus exposed were kept covered with a mild mercurial ointment. The result was eminently satisfactory—his cutaneous lesions gradually disappearing, his health being much improved. The tubercles upon the forehead, having remained for a long period without treatment, had induced such profound change in the skin that after their absorption typical depressed cicatrices were left. I saw him several times during the summer, when he was improving in health and gave no evidence of syphilis.

The next case was similar in appearance, but fortunately more satisfactory in its results. The patient, Patrick R., æt. 34, a labourer, was first seen by me in my service at the New York Dispensary, in January, 1870. He gave a confused account of having had a chancre; but his statements as to the existence of constitutional syphilitic lesions were very clear. He had had, in February, 1868, a copious rash upon the body, upon the palms and soles, and his scalp had been largely covered with scabs. He had been treated at New Orleans by a physician, from whom he obtained a prescription, ordering iodide of potassium in five-grain doses, of which he had taken intermittently during part of two years. He stated that he

had been free from eruptions during the year 1869 until about the month of November, when he noticed some spots on the arms over the great trochanters, and in the neighbourhood just below the head of the left fibula, and upon his scalp. Shortly after this time he observed a swelling at the inner angle of each eye. He thought that the left swelled first, shortly after that the right. Upon examination I found two tumours of similar appearance to case No. 1, with the exception that they were slightly broader at the base, seemingly to shade off into and be seated for a very short distance in the surrounding conjunctiva. They being fully half an inch in height jutted out very perceptibly between the lids. They were not superficially ulcerated, and gave forth no secretion. Occasionally an itching or tickling sensation caused the patient to rub them, when slight inflammation followed. The function of the bodies was wholly impaired, tears and secretions passing over the cheeks. To the touch they also presented a sensation of firmness. It was evident also in this case that there was no osseous lesion underneath, but that the affection was limited to the caruncles. This patient had never had any affection of the eyes, nor at any time had secretions deviated from the normal channels. Closure of the lids was attended at first with a little effort, and when the parts were coapted these little bodies protruded. Having in my mind the history of the case and the teachings of the previous one, I placed the man on the same combined treatment, telling him to avoid all sources of irritation, and to wash the parts carefully each day with water, and then to moisten them and the lids with a little simple ointment. This time I averted the lapsing of the patient from my observation and care, by forewarning him. The treatment was followed, with more than usual assiduity for a person of his class, and in a short time a diminution in the height of the swellings was apparent. They gradually declined in their whole extent, and in ten months the caruncles were reduced to their normal size. My hopes for a perfect result were not, however, realized, as the diminution of the appendages continued for a month longer, in fact atrophy took place, and the little bodies were wholly absorbed, leaving a rounded sulcus in the inner angle of each eye. The resulting appearance was rather disfiguring, and it gave the man a frightened, staring look. Besides this he was ever after afflicted with epiphora, the tears and secretions from the conjunctiva escaping over the cheeks. This fact suggested to me a point which I have not seen mentioned, namely, that one of the functions of the caruncles is to conduct the secretions to the punctæ lachrymalia. Certainly there was no other explanation of the deviation of the tears; consequently it is fair to assume that their proper conduction is one of the natural functions of the caruncles.

Here, then, are two cases of syphilitic men in whom the lachrymal caruncles enlarge in a subacute painless manner. The question arises, what is the origin of the swellings? Their history excludes any question of traumatism or of simple inflammation, it being evident that they were the seat of a tissue infiltration. Now, as the syphilitic processes were active in the men, they having lesions peculiar to a late period of the disease, namely, gummy tissue proliferation, it is not unfair to assume that this was the same process which occurred in these appendages of the eyes. The structure of these bodies is such as to render them liable to syphilitic inflammation, as they are composed of glandular and connective

tissues, and are exceedingly vascular. Therefore, though they have not been reported to be the seat of syphilitic neoplasms until this time, there is no good reason which can be urged why they should not, and there are, as we see, reasons for supposing that they should. Why the neoplastic development should be thus sharply and symmetrically limited is difficult to determine, yet we frequently meet with similar equally peculiar infiltrations. Seeing that this abnormal tissue was developed elsewhere in the body and in a symmetrical manner, it is certainly not a far-fetched conclusion to say that the lesion of the caruncles was a gummy neoplasm. As corroborative of this view the result of the treatment is very important. In the first case no conclusions can thus be drawn, but in the second the evidence of the prompt action of the anti-syphilitic remedy was very apparent, as it induced resolution of the tumours without the aid of local applications. Therefore, I think, we are warranted in adding this new form of syphilitic lesion to the numerous ones already described.

In the two cases which I have detailed, the course of the swelling was slow and unattended by any marked symptoms; but as we know that late syphilitic processes are sometimes attended with inflammatory features, it would be injudicious to conclude that a subacute course is the rule. The error of the physician who operated upon the first case suggests that such swellings may often be looked upon as cancerous. Such an origin is to be excluded or determined upon, only, after a careful consideration of the history and features of the case; when, however, there is symmetry of development, it may be considered, I think, as in favour of syphilis and exclusive of cancer. The age of the patient should also be taken into consideration.

As so little is known of lesions of the caruncles, it may be interesting to briefly call attention to two cases reported by Graefe,¹ showing partial enlargement by fibrous tissue growth.

A healthy girl, eighteen years of age, sought advice for a swelling situated at the inner canthus of the eye. It had grown in one year to the size of a hazel-nut. For several months it had caused an annoying sensation of pressure when the lids were closed. Upon examination it was found that the tumour was distinctly circumscribed, and covered with a smooth reddish mucous membrane. It grew from the anterior surface of the caruncle, being connected by a thin and long band which was composed of dense fibrous tissue. A section through this tumour showed that it was composed of moderately loose connective tissue, which at some points appeared perfectly homogeneous, at others somewhat fibrillated. By pressure a small quantity of a watery fluid was evacuated. Under the microscope, layers of elongated nuclei and spindle-shaped cells were seen. The caruncle was normal. The small wound healed in a few days.

In a boy ten years of age, a swelling had gradually developed during four years. The tumour was half the size of a hazel-nut, presenting an intensely red surface covered with yellow dots. The magnifying glass

¹ Archiv für Ophthalmologie, vi. P. I. pp. 289-290.

showed that small funnel-shaped openings (evidently the orifices of glands), corresponded to these dots, from which very fine hairs grew. At some points of the surface whitish patches were seen through the mucous membrane, which resembled in appearance the inspissated or calcified secretion of the Meibomian glands. As the tumour annoyed the patient, not only by its size, but also by causing conjunctival irritation, it was excised, together with a portion of the caruncle of which it formed a part. Under the microscope it was seen to be composed of glandular structure, embedded in a scanty layer of connective tissue.

These cases, contrasted with my own, will assist in future in the establishment of a correct diagnosis.

125 EAST 12TH STREET, N. Y., January, 1875.

ART. VII.—*Trismus Nascentium*. By PHILIP A. WILHITE, M.D., of Anderson C. H., South Carolina.

MANY years ago Dr. J. Marion Sims, then of Montgomery, Alabama, now of New York, published in the *American Journal of the Medical Sciences* (April, 1846, July, 1848, and October, 1848) three remarkable papers on trismus nascentium, which at the time attracted great attention both at home and abroad. His views in regard to the pathology and treatment of this disease were novel and original; and were sustained by facts and arguments of a most convincing character. Yet they have not been accepted by the profession at large; and the medical men of the present generation are in the main ignorant of his teachings. These papers made a profound impression upon my mind; for I had seen several cases of trismus, all dying, and I was ready to grasp at anything that promised success.

Dr Sims contended that trismus nascentium was not traumatic tetanus, as had always been supposed, but

“that it is a disease of centric origin, depending upon a mechanical pressure exerted on the medulla oblongata and its nerves; that this pressure is the result, most generally, of an inward displacement of the occipital bone, often very perceptible, but sometimes so slight as to be detected with difficulty; that this displaced condition of the occiput is one of the fixed physiological laws of the parturient state; that when it persists for any length of time after birth it becomes a pathological condition, capable of producing all the symptoms characterizing trismus nascentium, which are instantly relieved, simply by rectifying this abnormal displacement, and thereby removing the pressure from the base of the brain.”—*American Journ. Med. Sciences*, July, 1848, page 59.

Dr. Sims contended that the inward displacement of the occiput, which always existed at birth, was kept up by the dorsal decubitus, whether in the cradle or in the mother's lap; that the symptoms of trismus were the result of this displacement, and that the lateral decubitus was sufficient to relieve the displacement and to cure the disease.

I was completely captivated by a theory so simple and so plausible, and I at once determined to investigate the subject from his stand-point, if an opportunity should ever offer again. I did not have to wait long, for soon after I read Dr. Sims's first paper I was called to my first case.

CASE 1.—It was a male child (white) twelve days old. There was nothing unusual in the labour, and the child was well and hearty till the seventh day, when it began to complain, and for five days it had not been able to draw the breast "to do any good"—and the mother thought it would certainly die of starvation. From having been fat and plump it had in five days become very thin. It lay in a cradle on its back most of the time. Its left arm and leg seemed to be paralyzed, and yet they were occasionally affected with spasmodic jerks. It was evidently a case of incipient trismus, or trismoid, as Dr. Sims designates the disease in its mildest form. There were no clonic spasms, and yet there was no doubt as to the character of the disease. I raised the child from the cradle and examined the head, and found the occiput displaced inwardly, the edges of the parietal bones overlapping those of the occipital along the line of the lambdoidal suture.

Having seen cases like this before, in the same stage, all dying, I determined to treat this one according to Dr. Sims's plan. I gave the child no medicine whatever, but I placed it on its side on a pillow, and allowed it to lie there about thirty minutes. I then changed it to the opposite side for thirty minutes more. I omitted to mention that for the five days of its illness it slept but little, and was whining and crying all the time. When I placed it on its side, all these symptoms of distress ceased and it rested quietly. With this hour's experiment of the lateral decubitus, I requested the mother to apply the child to the breast. She did so, and it seized the nipple, and, to the surprise of all present, it sucked with the greatest avidity, and from that moment it was well.

As before said, Dr. Sims describes two forms of the disease, trismus and trismoid, or acute and chronic. And according to my observation this distinction is correct.

The first symptom of trismus is inability to suck. This Dr. Sims says is pathognomonic of the disease. The child loses the power of seizing the nipple; and if the nipple should be forced between the jaws, it has no power of suction. The child seems to be indescribably distressed, moans, whines, cries, is colicky, sometimes has griping passages from the bowels, is restless, uneasy, sleeps badly, has borborygmi, slight spasms of one or both upper extremities, then tonic rigidity of the whole muscular system with clonic spasms, which come on at intervals, and are often excited by the touch or a noise. The expression of countenance is very peculiar, and can never be forgotten when once seen. The acute form terminates fatally in two or three days, sometimes in less time; while the chronic or milder form of the disease may continue for weeks and even for months—the child slowly wasting away to a mere skeleton, and dying of what was formerly called marasmus, which is but another name for gradual starvation.

I believe implicitly in the views expressed by Dr. Sims in regard to the pathology of this disease. It is clearly due to mechanical pressure upon

the brain, expended ultimately upon "the medulla oblongata and its nerves." When I see a certain set of symptoms following a fracture and depression of a piece of the skull in the adult, suddenly relieved by elevating the depressed bone, I cannot help thinking that they bear the relation of cause and effect. And when I have seen in scores of instances certain symptoms characterizing what we designate by the term trismus nascentium, attended with a depressed condition of the occiput, suddenly relieved simply by elevating the depressed bone, I am bound to believe that they bear the relation to each other of cause and effect. The occiput is sometimes so slightly depressed that it is not easy to detect it; again, when the child has lain for a long time on its back in a cradle, we find it depressed to the full thickness of the bone; and again we may find only one edge of it under the parietal bone.

Sometimes a very slight depression will produce all the symptoms of trismus in an aggravated form; again a deeper depression may produce the disease in its milder form. The dorsal decubitus and the cradle together are the great sources of evil. The method of suckling the child with the occiput resting on the mother's arm, is another factor in pushing the occiput inwards. The disease can be as well produced by prolonged lateral decubitus when the child's head has rested upon hard substances, causing an overlapping of the edges of the parietal bones along the sagittal suture. For further information on these points, I must refer the reader to the papers of Dr. Sims previously alluded to.

The prognosis of this disease is always unfavourable when left to the recuperative powers of nature; or when treated on any other principle than that laid down by Dr. Marion Sims and advocated in this paper.

Hundreds of children die annually of this disease, where its real nature is not understood even by the physicians in attendance.

To illustrate the principles of treatment already indicated, I propose to give the histories of a few cases out of the many that have come under my observation in the last twenty-five years. The case (1) already related, and cases 2, 3, and 4, to follow, are given from memory. They occurred when I resided and practised medicine in Franklin County, Georgia; and in moving to South Carolina my note-book was lost.

CASE 2.—Child of Mr. E. W. W., of Carnesville, Georgia, was born in March, 1851. It was a large and healthy child at birth, and remained so up to the third day, when the mother noticed that there was some difficulty about its drawing the breast, and on the evening of the fourth day it lost the power of sucking altogether. On the sixth day I was called to see it. It was lying on its back in a cradle, and had all the symptoms of a well-marked case of trismus. There were a number of old women in the room who had exhausted their specifics on the child, all of whom pronounced the case fatal. I recognized the character of the disease as soon as I saw the child. From the symptoms and the history of the continued dorsal decubitus in the cradle, I fully expected to find a depressed

occiput, and I was not disappointed; for on taking the child up from the cradle I found the edges of the occiput much depressed below those of the parietal bones. I lost no time in placing the child longitudinally on a pillow on the side, with the face turned well to the horizon, so that the weight of the head was sustained on its fronto-parietal portion. After resting in this position for about thirty minutes, I had it applied to the mother's breast, and, strange as it may seem to those who have never witnessed such a thing, the child seized the nipple and sucked vigorously; and from this time there was no return of the disease. It must be remembered that the child had not been able to suck at all for nearly forty-eight hours; and very little for twenty-four hours previously. I gave it no medicine whatever, and this wonderful change from apparent death to comparative health was effected simply by removing the pressure from the base of the brain. The child was kept on one side or the other for three or four days, when it was found that the edges of the occiput overlapped those of the parietal bones.

CASE 3.—A negro child (J. H., of Carnesville, Georgia), born in the summer of 1852. At birth it was a fine healthy child, but when about two weeks old it began to cough, became very thin, and imperfectly nourished. The cough gradually got worse, and a physician was sent for who pronounced it a case of whooping-cough. The child went from bad to worse, the cough became very distressing, and the emaciation extreme. When it was about four weeks old, I was consulted, and found it greatly emaciated, looking old and wrinkled, with a most painful expression of face, and the cough was very constant and troublesome, and might well have been taken for whooping-cough; but the term laryngismus stridulus will better explain it. It also had frequent colicky, griping passages from the bowels. The peculiar physiognomy of the child, with the history of the case, led me to suspect that its disease belonged to the trismoid group described by Dr. Sims. I forgot to mention that the child had paralysis of the left arm and leg. This symptom aided me in the diagnosis. On examination I found the occiput very much depressed, loose, and easily depressed upon the brain. By pressing the already depressed occiput further in upon the brain, the peculiar stridulous cough could be produced at will. This was done over and over again, the violence of the paroxysm depending upon the amount of pressure, and the extent to which the bone was forced in upon the brain. These experiments were continued till the physician (with whom I was called) and all present were satisfied that the depressed occiput was the source of all the evil. I gave directions about the management of the case, with the full assurance that the child would recover if they followed out my prescription of the lateral decubitus instead of the dorsal. I saw the case no more; but I heard a few days ago (Oct. 1874), from the physician in attendance at the time I was called, that the directions I gave were followed, and that the child speedily recovered.

CASE 4.—A male child (son of Mr. U. S., of Franklin Co., Georgia) was born in June, 1852. I was called to see it when it was six weeks old. The mother stated that it was a large healthy child at birth, and seemed to thrive and do well till it was about a week old, when it became colicky, and was uneasy, restless, and crying almost all the time. The mother said that from the time it was first taken it could not suck much, that it could not take hold of the nipple, that "the more she tried to make it suck, the less it would suck." At first she attributed its inability to suck, to the colicky griping pains from which it was scarcely ever free; but she soon

determined that it could not take hold of the nipple at all, and she was then obliged to resort to spoon feedings to keep it alive. In this her efforts were very little better than with the breast. The child was very much emaciated, and had paralysis of the left side, which had been noticed for some time by the mother. It had the irritable whining cry, and the peculiar expression of countenance so characteristic of the trismoid affection, that I at once examined its head, and found the occipital bone very considerably depressed below the level of the parietals.

From the history of the case, and from the present symptoms, I had no doubt that the pressure on the base of the brain was the source of all the trouble. The bones of the head were unusually well ossified, and I thought that an operation would be necessary for the elevation of the occiput from its abnormal position. I explained to the parents the nature of the disease, telling them that death was inevitable if the occipital bone remained as it was; that we would try the lateral decubitus for a day or two, and if there was no improvement, I would operate and elevate the bone. They would not for a moment hear of a surgical operation. I gave directions for the management of the case, and requested them to send for me if they should change their minds about the operation. I saw the child no more, and it died about a week afterwards.

The following cases are reported from notes taken at the time of my visits.

CASE 5.—On the 10th Sept., 1859, I was called to see the male child of Mr. I. L. S., and received the following statement:—

The child was fourteen days old, was strong and healthy at birth, and continued so till the eighth day, when it began to fret and cry, and seemed to be in pain, and was very restless all night. It sucked with difficulty. The next day all these symptoms were worse. It had several greenish passages, but with no relief to any of its sufferings. It went on from bad to worse till I was sent for. It could not suck at all; had great rigidity of the jaws, spasmodic jerking of the right arm and leg; had borborygmi and frequent dejections of a thin, greenish appearance, which were not in the least controlled by astringents and carminatives. It was much reduced in flesh, and had the cry and expression indicative of persistent suffering. The child had been lying on its back in a narrow cradle all the time when not in the mother's arms. I requested the mother to take it up and let me see it suck. It seemed to be hungry, but could not take the nipple in the mouth. On examining the head I found the occiput displaced inwardly to a considerable extent.

The parents and friends were greatly alarmed about the condition of the child, and had for some hours expected it to die. I explained to them that the child's condition was produced by the dorsal decubitus, and the consequent pressure of the occiput on the brain; that it was necessary to relieve this pressure or death would take place very soon. I showed them how to place the child in the lateral decubitus, and directed it to be changed from side to side. Gave no medicine, and as I was much fatigued by a long night's ride, I proposed to go to bed and leave them to carry out my instructions. It was placed laterally on the pillow at 2 A. M. The parents protested against my going to bed without giving the baby some medicine. But I had such faith in the lateral position that I simply said, "do as I told you, and the child will soon be well."

I arose at 7 o'clock, and was greeted with the cheering news that "the

baby has been sleeping soundly, and is now sucking freely for the first time since it was first taken."

I found it sucking as a healthy child should, and it seemed to be perfectly well. There was no colicky pain, no diarrhoea, and the spasms of the arm and leg had ceased ever since it was laid on the pillow. On examining the head I found that the occiput was not more than half as much depressed as it was at 2 o'clock when first placed on the pillow. From this time the child was well, and that too without a drop of medicine. I saw the child no more till he was able to run about.

The parents were so much afraid of the recurrence of the disease that they kept the child on the pillow for an unnecessarily long time.

CASE 6.—On the 8th July, 1861, Mrs. A. M. A. gave birth to a strong, healthy male child, which continued well till it was about six days old, when it began to show signs of uneasiness and suffering, as manifested by fretting, whining, moaning, and sleeplessness. These symptoms gradually increased in severity in spite of all they could do, until I saw it on the 28th of the month. It was then twenty days old, and had been ill for a fortnight. It was very much emaciated, very small for its age, evidently lighter than it was at birth, and was very feeble. It slept but little; moaned, whined, and cried almost all the time. Countenance sharp and peaked; frequent dejections of a greenish, slimy character. It took but little nourishment, and looked like it might die of exhaustion at any moment.

This child had no spasms, no rigidity of the limbs, no stiffness of the muscles of the jaws, and no inability to suck—all of which characterize true trismus nascentium, and yet I felt satisfied that all its other symptoms could only be explained by reference to the active cause of trismoid. The child had been kept constantly in a narrow cradle on its back. This prolonged decubitus, and the fact that it was well and strong up to the usual time for the development of trismus, and that it had a group of symptoms incident to that disease, led me to examine the condition of the occiput. I found it slightly depressed. The depression would not have been recognized by a careless observer, or one unaccustomed to investigate such cases. And yet I was satisfied that this depression of the occiput was the origin of all the trouble. I had the child placed lengthwise on a pillow, flat on its side, and I directed the nurse to change it from side to side, but not to place it any more on the back. To allay the anxiety of the mother, I ordered an infusion of assafoetida to be given occasionally.

July 29. Child rested much better, and slept more during the night than at any time since it was taken ill. Ordered perseverance in lateral decubitus. No medicine.

30th. Much improved. Slept still better. Takes more nourishment. Cries much stronger. Occiput gradually regaining its normal position exterior to the edges of parietal bones. Continue lateral position. No medicine.

31st. Improvement very marked. Bowels moved less frequently. Dejections more natural.

August 1. Slept very well. Bowels better. No whining, but cries strongly when it cries at all. Occiput nearly normal.

From this time on convalesced gradually, and soon got perfectly well, without any other treatment than that of position. It took only two or three doses of assafoetida, on the day of my first visit, no medicine afterwards. Before I saw it, it had been dosed liberally with astringents, carminatives, and anodynes, without the least improvement.

CASES 7, 8, and 9.—On the 9th March, 1863, at 4 o'clock A. M., Mrs. W. R. gave birth to triplets, two girls and a boy, fine, hearty, plump children, the three weighing $19\frac{3}{4}$ pounds. There was nothing unusual in the labour, and the children were physically beautiful. But as they had not expected so many at once, sufficient provision had not been made for their accommodation; they were all laid or rather packed into a small crib, only large enough for one child. They were laid side by side on their backs, face upwards all the time, except when they were taken up to be suckled. They seemed to be as hearty and vigorous as children of their age could be up to 4 o'clock A. M., March 12th, precisely three days after birth, when the first indication was given that anything was wrong. Mrs. R. said that about 2 o'clock in the morning of the 12th, when she went to suckle the children, one of the girls could not take the nipple nor suck, and the more she tried to make it suck the worse it got, and she soon discovered that its jaws were stiff, and that it could not swallow, for when she poured a little milk into its mouth, it would run out at the nose; that it was whining and crying all the time, and its head constantly rolling from side to side, "that its eyeballs and lids were in constant spasms, the balls rolling and jerking, and the lids snapping and squinting." And she described it as having tonic rigidity with clonic spasms. All these symptoms grew worse. The child was never able to suck or swallow again, and it died at 4 P. M., about twelve hours after the disease was fully developed. Between 12 and 2 o'clock P. M. the other two children were taken in the same way, and with the same set of symptoms as the first. The whining cry, the nystagmus bulbi, the squinting, the inability to suck, the locked jaws, the spasms of face and extremities, were alike in all three, and the little boy died at 8 P. M., being from six to eight hours from the advent of the disease. The friends watched with the remaining child all night, expecting every moment to see it pass away as the others had.

On the morning of the 13th it so happened that I was passing the house to make a visit in the neighbourhood; and not having heard anything from Mrs. R. and the babies since I left them on the 9th, I called to inquire after them. On entering the house I was greatly surprised to see a coffin and a gathering of the neighbours, for I expected to be sent for if any emergency should arise to make a visit necessary. I was informed of the facts already detailed, and was told that the third child would soon be dead, as it had been dying all night, and that they were only waiting for it to die so that they could bury it in the same coffin with the others. From the history of the symptoms detailed I recognized the fact that all three of the children had trismus in the acute and violent form, and I at once asked to see the one that was yet alive. I found the child lying on its back in the crib, and in the last stage of the terrible disease that had so suddenly taken off the other two. It was so weak that it could scarcely cry, had no perceptible pulse, and like all present, I really thought every breath would be its last. I took it up from the crib to examine its head, and found the occiput depressed to an incredible extent.

Notwithstanding the fact that the child seemed almost moribund, I stated to the parents and friends that I wished to try the experiment of the lateral decubitus. They at first objected to my doing anything at all, saying the child must die as the others had, and that it would soon be out of its misery. Mrs. R. said it had not been able to swallow for the last fifteen hours, and what was the use worrying a dying child. However I carried my point, and had the child laid lengthwise on a soft pillow on its side,

and turned from side to side every fifteen minutes. From the moment it was laid on the side, a decided change was seen in all its symptoms, and in less than one hour and a half from the time the lateral decubitus was instituted, all spasm ceased, the jaws were unlocked, and the child sucked freely, and swallowed well. I gave it no medicine, but simply directed that lateral position should be kept up for some time, being careful to change it from side to side every hour or so.

Before leaving, I examined the heads of the dead children, and found the occiput in each depressed to an unusual degree, leaving no doubt in my mind that they might have been saved by the proper lateral decubitus if it had been tried in time.

I requested the parents to send for me if my little patient did not progress favourably. It rapidly recovered, and I saw it no more till it was eight months old, and there was not a finer child in the country of its age.

Mrs. R. informed me a few days ago (since I began this article), that the children were taken sick as they were born, that is, the first child born was the first taken, the second was the next, and these were the two that died.

CASE 10.—In March, 1868, C. McL. brought his child (female) to my office for advice. It was hearty at birth, but when about ten days old it began to complain; became restless and sleepless, and whined and cried almost all the time; was colicky, and had frequent passages, which were sometimes greenish, and again thin and watery. It was now two months old, and was pale, puny, and greatly emaciated; was restless, and seemed to be in constant distress, as manifested by involuntary movements and the peculiar expression that belongs to trismoid cases. It slept only when under the influence of anodynes, and then for but a short time. It had never had spasms; it had always sucked with difficulty, though they noticed no stiffness or locking of the jaws. It was all the time licking out its tongue as if it were hungry. Recognizing the character of the disease, I examined the head, and found the occiput clearly displaced inwardly under the parietal bones. The bones of the head were well ossified, and the edges of the occiput seemed to be impacted under those of the parietals. I stated to the father that medicine could do his child no good; that this was a case of trismoid affection, due to the pressure exerted by the displaced bone upon the base of the brain; and that it was necessary to elevate the bone. I gave him directions about the lateral decubitus on a pillow, and requested him to bring the child to me again in two or three days if it should be no better. In a week he returned, saying he had carried out my instructions, but the child was no better, on the contrary worse; for it was weaker, and, if possible, more emaciated. I then explained to the father that the only hope of relieving the child was to perform a slight operation on the head, for the purpose of elevating the occiput from its depressed condition. But he would not hear of such a procedure, and returned home with the child, and it died about a week afterwards.

CASE 11.—In June, 1870, Mrs. A. McL. rode to my office on horseback, a distance of ten miles, with her infant in her arms, exposed all the way to the sun's rays. The child (female) was six weeks old. The mother stated that it was well and hearty at birth, but in a few days after it began to complain; that it moaned and cried all the time; was restless, and slept only when taking cordials and anodynes; that it had constant trouble with its bowels; that it was colicky, and had frequent dejections

which were sometimes green, and again clay-coloured. It had not had spasms nor stiffness of the jaws. It was pale, sickly-looking, and extremely emaciated, and had the peculiar distressed trismoid expression. The usual routine of anodynes and astringents had been exhausted in this case, without the least benefit. It resembled in every particular the case (10) just described. The two cases were children of two brothers. On examining the head, I found the occiput displaced inwardly to a marked extent. The edge of the occiput on the left side was closely impacted under the corresponding edge of the parietal bone; the right was not pushed in so far, but appeared to be firmly held in its abnormal position. My opinion was soon made up that the displaced occiput was the sole cause of all the trouble, and that the ten-mile horseback ride, with the occiput resting all the time on the mother's arm, or on her knee, had greatly aggravated all its symptoms. I explained to the parents the philosophy of the lateral decubitus; gave them a pillow, and showed them how to lay and carry the child on it, and explained that I believed it would be necessary to perform an operation to elevate the depressed bone. I told them to send for me, if their ride home did not kill the child, and I would go and operate on the bones of the head, and try to rectify the position of the displaced occiput. They did not send for me, and the child died about ten days after I saw it.

CASE 12.—On the 20th October, 1870, Mrs. A. F. D. gave birth to a female child. It was large and healthy. Its head was large, round, and symmetrical. It did well for the first twenty-four hours, after which it began to be restless, sleepless, and fretful all the time, making a distressing moaning, with occasionally a peculiar sort of unpleasant breathing. It breathed as if it had taken a severe cold. It had great difficulty in taking the nipple and sucking. The nurse was very faithful, and anxious about the child, and seldom laid it in the cradle, but held it on her lap most of the time on its back. The moaning and restlessness were attributed to colic, and she gave it repeated doses of paregoric and catnip tea, but with no benefit. These symptoms gradually grew worse; the difficulty of seizing the nipple and sucking was very great; the moaning, crying, and colic were constant, and it seemed to be in great pain. Thus it went on from bad to worse, till 11 o'clock P. M. on the seventh day, when it suddenly gave a loud scream, and went into convulsions. They gave it a warm bath, but the clonic spasms followed each other in rapid succession all night, and until I saw it at 10 A. M. the next morning (eighth day). When I arrived, it appeared to be in a hopeless condition. Power of nursing gone, tonic rigidity extreme, clonic spasms in rapid succession, and it seemed that each spasm would end its life. It was almost moribund, and was lying in the nurse's lap face upwards.

Seeing at a glance that I had an aggravated case of trismus to deal with, I lost no time in examining the condition of the head, and found the occipital bone pushed deeply in on the brain. I immediately took it from the nurse's lap, and placed it on a soft pillow, lengthwise on the side, at the same time manipulating the parietal bones, so as to modify the position of the displaced occiput. It never had a clonic spasm after it was placed on the pillow, and in a very short time the tonic rigidity had all disappeared, and in one hour it took the breast and sucked freely; gave no medicine; left directions for a continuance of the lateral decubitus; 8 P. M. found the child well; next day child perfectly well, without a drop of medicine of any kind; occiput in its normal position.

December 5, 1874. I saw the little girl to-day, and there is not a finer child of her age in the county. I read the above history to the mother, and her recollection of the case corresponds exactly with my notes of it.

This article has been extended to a greater length than I anticipated; yet I feel unwilling to bring it to a close without reporting two more cases of trismoid, which were very similar, and are interesting by contrast of treatment and result.

CASE 13.—September 21st, 1873, when casually passing a neighbour's house, I was hailed, and requested to stop for a moment, when two ladies came out to the road, one carrying an infant in her arms. On getting near me, one of them said: "Well, doctor, we stopped you to inquire if you could tell us what is the matter with this baby." I replied: "In the absence of the history of the case, and judging only from its age and the peculiar expression of countenance, I should think it was suffering from what doctors call trismus, or lockjaw." For it had that peculiar trismal countenance so characteristic of the disease, and which I am unable to describe, but which once seen cannot soon be forgotten. I examined the child's head as I sat in my buggy, and found the occiput depressed to a considerable extent below the level of the parietal bones, one edge more than the other, and apparently closely jammed there. I explained briefly the nature of the disease, and as I was in a hurry to make a professional call further on, I promised to stop in on my return, and inquire more particularly into the child's case.

On my return I learned the child, a female, was born on the 19th July, 1873; that it was now two months old; that its mother, Mrs. O. H. K., died when it was seven days old; that it was a fine hearty child at birth, thrived, and was quite well till it was about three weeks old, when it first became restless, fretful, cried a great deal, and slept but little. It soon had diarrhœa, the movements very frequent, sometimes greenish and at others thin and watery. It had never refused to suck, but ever since it began to complain, it sucked with difficulty. It had never had spasms or rigidity of the muscles. These symptoms gradually grew worse up to the time I saw it (September 21st). It had been treated by three of the best physicians in the county without any benefit. It was thin, and emaciated to a great degree. Its dejections were frequent, no medicine seemed to have any control over them. It whined and cried and moaned almost all the time, and it slept but little. I explained to the ladies and the father that I thought the depression of the occiput was the sole cause of the disease, and that I thought it might possibly be necessary to perform an operation to place the bone in its proper position. I was obliged to leave, but I requested Mr. K. to go for his physician, and tell him what I said about the case. He went to see my friend, the doctor, and laid the subject before him. The doctor advised him to go home and let the child alone, as he did not believe in any operative procedures in such cases. Nothing more was done, and the child gradually sank, and died about two weeks after I saw it.

CASE 14.—On the 16th October, 1873, I was called to see the child of Mr. C. M. On entering the house I discovered the object of my visit lying in a small narrow cradle on its back. It was emaciated to an extreme degree; crying, whining, and moaning incessantly, and rolling its head continually from side to side. It had the peculiar characteristic trismal

face. The history, symptoms, and appearance of the child will be seen to be the same as those in the case (13) previously related. Before making any examination of the case I said to the aunt: "I think we have here a case of trismus;" and I then explained the nature of the disease, and told her that it depended upon a displacement of a bone on the back of the head. Her reply was: "Yes, we have all noticed a sunken place in the back of the head for several weeks." On examination my suspicions were verified. I found the occiput inwardly displaced to a very considerable extent, pressing deeply upon the brain and firmly held in its abnormal position. I learned that the movements of the bowels were frequent and persistent, that it slept but little, that it cried, moaned, and whined all the time, day and night. As I was satisfied that it was a case of trismoid affection, I took it out of the cradle and laid it properly on its side on a pillow; and the aunt, who had been its only nurse from its birth, gave me the following history. The child, a male, born August 6, 1873, was large and healthy; labour normal. The mother died six days after its birth. The child did well and was perfectly healthy till three weeks old, when it became restless, uneasy, fretful, and cried a good deal. It had lain in the cradle most of the time flat on its back. It was supposed to have the colic, and catnip tea and anodynes were given liberally, but without benefit. The bowels were greatly deranged; the dejections frequent, greenish, and offensive. These symptoms increased in gravity, and the family physician was called in, who prescribed various anodynes and astringent remedies to relieve the pain and check the bowels, but only with temporary effect. A second physician was called in, but with no better result. The patient continued to grow worse, notwithstanding, all the skill of the two accomplished physicians who had seen the case. I was called on the 6th of October. The child was then just two months old, and had been gradually growing worse ever since it was three weeks old. I have never seen an infant so emaciated, being literally a skeleton. It had been sick just five weeks, and, as it was pronounced to be incurable, no physician had seen it for a week, but its aunt had regularly given the anodynes and astringent remedies that had been prescribed for it. I explained to the aunt the nature of the disease, and the treatment, and the necessity of persevering with position for a day or two. I told her that the case was not hopeless, that if the bones of the head did not soon show some signs of rectification, I would puncture the scalp and raise the depressed bone up to its proper place. As previously stated, the child was placed properly on a pillow on its side, and I directed the aunt to turn it from side to side until I should return, which would be in about three days. By that time, I felt confident that the child would be better if position alone could effect the change. If I should find it no better, I proposed to operate and elevate the occiput from its abnormal position. I stated that it was useless to give it any medicine; but that they might give it one grain of chloral hydrate at night to procure a little sleep, and that I thought there was no hope of its getting better until the occiput was raised and the brain relieved of its pressure. The aunt was a very intelligent woman, and followed my directions as to the lateral decubitus literally, although she had but little faith in its doing the good I promised. *For the first two days and nights there was no change whatever, but on the third night the great restlessness subsided in some degree, and the child slept several hours for the first time since it was taken, and convalescence set in. I saw the child a few days afterwards; the diarrhœa had ceased entirely, it lay quietly, no fretting, no crying, and

it slept soundly, and took nourishment well. On examining the head I found the occiput occupying very nearly its proper relative position, and the child was well without taking any medicine except two doses of chloral, one grain each on the first and second nights after my visit. But I have no idea that this exerted the remotest influence on the result, for there was no marked improvement till the third night, when the prolonged and persistent lateral decubitus began to produce its effects on the relative position of the occipital and parietal bones. The child is now a sprightly little fellow, and when thirteen months old weighed twenty-five pounds.

The similarity in these two last cases is very marked. Each lost its mother in a week after birth. Each was taken on the 21st day. Each had a similar train of symptoms. Each was reduced to the lowest state of emaciation. Each had the same degree of depression of the occiput, and the same degree of immobility or impaction. I saw each one at about the same stage of the disease. One had no postural treatment, and died a week after my visit; the other had the proper postural treatment, intelligently carried out, and in three days it was wholly cured.

This completes the number of cases that I shall bring forward on the present occasion. I have seen many more, but these will suffice for all practical purposes. There is such a similarity in all of them, their symptoms are so uniform and unvarying, that the repetition of cases becomes monotonous, and I feel that I have already overtaxed the patience of the reader.

I have not classified my cases, dividing them into acute and chronic, or trismus and trismoid, as was properly suggested by Dr. Sims; but I have given them in chronological order from 1851 to 1873.

In looking over these cases I find three (5, 10, 12) of acute trismus promptly cured by position alone. Two (7, 8) died without treatment before I saw them. Of the nine cases of trismoid affection, five (1, 2, 3, 6, 14) were cured by position alone; and four (4, 10, 11, 13) died without treatment. The two acute cases of trismus that died without treatment would assuredly have been saved, just as their sister was (case of triplets), if the only and proper method of treatment (position) had been adopted. It is impossible to say what would have been the result of postural treatment intelligently carried out in the four trismoid cases that died.

Taken all in all, these cases seem to me to justify the conclusion that trismus nascentium is the result of mechanical causes; the predisposing cause being protracted or tedious labour, and a too well ossified state of the foetal cranial bones. The exciting cause is undue pressure on these bones, more especially the occipital; while the immediate cause is undue compression of the medulla oblongata, and the nerves originating from it. The cases so far given are all of one general character, and all go to show that the disease is the result of pressure exerted at the base of the brain. In all of them the pressure was produced by an inward depression of the

occiput, differing, however, in degree from the slightest to the greatest possible.

I may, at some future time, resume the subject, and detail some cases of this disease from pressure on the brain by parietal displacement.

As Dr. J. Marion Sims was the first to give us a correct and rational view of the pathology and treatment of trismus nascentium, I must refer the reader to his interesting and graphic articles on the subject already alluded to. The profession at large have not accepted his teachings on this subject. This is another illustration of the hackneyed phrase that truth travels slowly; but the time will arrive, sooner or later, when the great truths that he announced to the world so long ago will be accepted and acted upon by all in the profession who will observe and reason for themselves.

ART. VIII.—*The Injection of the Bladder.* By E. L. KEYES, M.D., of New York, Professor of Dermatology in the Bellevue Hospital Medical College, one of the Surgeons to the Venereal Division Charity Hospital, etc. (With a wood-cut.)

THOSE members of our profession who, in modern days, have been brought into contact with many and varied forms of bladder disease, have pretty generally come to incorporate injection into the bladder, in one of its many forms, into their treatment of chronic cystitis.

A given practitioner may have this or that substance which he injects in solution and to the action of which he attributes all the benefit derived, as silicate of soda, lead water, solutions of zinc, chlorate of potash, carbolic acid, permanganate of potash, borax, etc. etc., perhaps nitrate of silver; or possibly he may vaunt a special method of topical treatment as being endowed with peculiar virtue; such as double current catheters of one pattern or another, drainage, instruments *à demeure* with occasional injection, irrigation, etc.: some of which methods call for admiration of the patient tolerance of the bladder, and its willingness to get well, sometimes, in spite of obstacles, provided only it be kept reasonably clean.

Now this modern tendency toward relying upon topical measures in treating chronic maladies of the bladder (often to the exclusion of the older-fashioned administration of the preparations of buchu, pareira brava, uva ursi, triticum repens, etc.) clearly indicates that experience has proved the value of the former measures; and the fact that many different substances in solution, and many different methods of getting urine out of the bladder and some fluid into it, are alike claimed as the chief agent in producing the good result—this fact shows there must be some one action,

common in a greater or less degree to all the varied methods, which, mainly, yields the good result sought for. An extended search is not necessary to decide what this one common action of all the methods is; essentially it consists in emptying the bladder thoroughly, and then washing it out, generally with a warm fluid.

Cleanliness then is a chief element in the cure of chronic cystitis. Undoubtedly the heat does good by its soothing influence (nearly all injections are made warm). Unquestionably many astringents, and stimulants, and sedatives, do good at the proper time. They require some care in selection, and may greatly assist the general issue; but the main point must not be lost sight of, namely, that the element of first importance in the treatment of the bladder when in chronic inflammation is its hygiene, and that the corner-stone of hygiene is cleanliness.

In a broad way it may be stated without fear of contradiction, that all chronic cystitis is due to and entertained by a mechanical and a chemical cause; the former, some obstruction to the free outflow of urine; the latter, carbonate of ammonia, liberated by the decomposition of urea, a decomposition sure to occur in any stagnating urine; and carbonate of ammonia has a high degree of power as an irritant of mucous membranes.

This very general view of the etiology of chronic cystitis will bear close scrutiny;¹ it can only be glanced at here, as the object of this paper is, simply, having established the great value of injections into the bladder, to detail the best means of administering the same.

Nor can the mechanical treatment of the mechanical causes of chronic cystitis be more than alluded to here. When these causes can be removed in time, the cystitis gets well of itself; but in the many cases where the cause cannot be eradicated (enlarged prostate,² stone too large for removal, neighbouring growth pressing upon the bladder, etc. etc.), often the only real relief the patient is able to find, short of anodynes, is by injections into the bladder, and the amount of good produced by this simple means is sometimes but just short of cure, although the process may have to be continued by the patient indefinitely.

¹ Another element of great value, and one not generally recognized, but which perhaps is important enough to form a trinity with the more conspicuous mechanical and chemical causes, is the nervous element, a certain hyperæsthesia of the deep urethra and vesical neck, probably always present in a greater or less degree, and of which a rather full account has been given in another place. (VAN BUREN and KEYES. *Genito-urinary Diseases with Syphilis*, New York, 1874.)

² Another effort toward radical cure of the enlarged prostate has been made by C. Heine, "*Ueber Radicalbehandlung der Prostatahypertrophie*, Archiv f. klin. Chir. 1874, i. p. 79," who claims considerable success (without risk) by means of interstitial parenchymatous injections of the prostate, with small quantities of tincture of iodine.

Finally the scope of this article does not allow a critical consideration of the relative value of the many substances used for vesical injection.

In reality these are on the whole of secondary consideration to the subject now under discussion. Where a surface, for example, on any part of the body is discharging pus, the surgeon does not first bestir himself in the selection of a topical application, but the fundamental principle of action is to clean the surface and get rid of anything which may act as an irritant, and then there is time enough to seek for further aid.

The rational treatment of all chronic disease is built upon the foundation of intelligent hygiene. The hygiene of the bladder, when in a state of chronic inflammation, cannot be encompassed except by thoroughly emptying and cleansing the organ, more especially if there be any atony, as is so often the case.

An efficient and easy method of injecting the bladder with warm water, by the patient himself, alone can meet the requirements of many cases of chronic cystitis.

Having thus briefly stated the value of vesical injections, and emphasized the fact that the patient must do his washing for himself, perhaps for a long series of weeks, months, or even years, in order to prolong his life and preserve his health and vigour, it becomes evident that the description of an instrument which a patient can easily manage, and which meets all the demands of the surgeon, is worthy of some care in being prominently brought before the medical public.

The instrument about to be described has nothing in any of its parts which is new. It is a soft rubber catheter, a two-way stopcock, and a fountain syringe; but it fulfils to a nicety all the many requirements of a vesical syringe, whether used by the patient or the surgeon. Dr. Van Buren and myself, after passing it through several modifications, have employed it continuously for more than a year, and now rely upon it almost to the exclusion of the rubber-bag syringe, which was before the favourite. A number of patients are now using the instrument under our direction. In no case has it given rise to any inconvenience, while its application has been uniformly easy and productive of all the comfort that injections can afford. The most bungling fingers of the clumsiest old man can master its simple requirements in one or two lessons, and the expressions of gratitude for the relief it has afforded have been sometimes touching in their earnestness.

Before describing the syringe and its method of use, a glance at a few of the type instruments, both catheters and syringes, which have been commonly employed for making injections into the bladder, will expose the objectionable features of each—features which have led to a search for something better, and objections which do not hold against the present instrument.

All syringes having a piston movement are faulty. The piston is

pretty certain sooner or later to get out of order, and either to become too loose, admitting air, or too tight, requiring force to start it, and then moving in a jerking manner. But, even allowing that the instrument keeps in perfect order, still many an old man cannot use it at all upon himself, to say nothing of comfort. Only with the utmost care can the surgeon drive the piston home without some shock; and any, the least, motion communicated to the catheter by the syringe is felt by the neck of the bladder—the most sensitive portion of the whole tract—the part it is especially desirable not to irritate. Vesical injections would lose half their value as a therapeutic measure, indeed would sometimes be actually harmful, were it necessary that during each injection the neck of the bladder should receive a slight shock. The gentleness with which the injection is executed is a large factor in the value of the procedure. When to this serious objection are added the others, the difficulty an old man experiences in using a piston-syringe upon himself at all with one hand, while he is holding the catheter in the other, and the necessity of refilling the syringe, or at least re-adjusting it for each injection, if several are required to clean the bladder, it becomes evident why the piston-syringe, for use by the patient at least, has been so generally abandoned.

The injecting bag does better, but it has its faults. It is difficult to impress an old man with the unadvisability of throwing air into the bladder, and harder still, in many cases, to teach him how to avoid it. The patient will persist in opening the stopcock too soon, or only partly filling the bag. The trembling hand, so inefficiently aided by the failing sight, makes clumsy work of introducing the pointed nozzle of the syringe into the small opening of the catheter, and the shrunken fingers will sometimes clasp the bag in vain in the effort to expel its contents—for it requires pretty steady and continuous pressure on a bag-syringe to make an injection through a small catheter. The injecting bag, however, is so much more simple than the piston-syringe that it has enjoyed a just popularity.

As for some other means of cleansing the bladder except by simple injection through a catheter, the fluid being allowed to flow out again through the same instrument, but a few words need be said.

Instruments *à demeure* (perhaps left open), through which occasional injections may be practised, inflict unnecessarily prolonged violence upon the neck of the bladder, and are at best desirable only in a very small minority of cases.

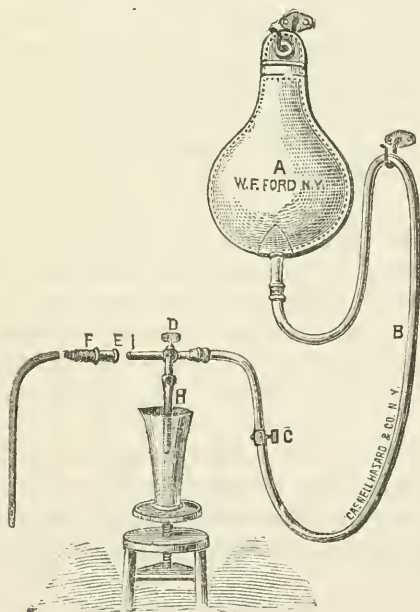
Any means of ordinary drainage, though better than allowing the urine to stagnate, is less good than where injections are employed.

Irrigation, besides the objection urged against instruments *à demeure*, may be accused of the fault which is conspicuous in double-current catheters; namely, that with them it is sometimes impossible to wash the bladder clean.

Double-current catheters of all descriptions have the cardinal defect, namely, that during their use the bladder does not at any time become distended. The stream rushes in through one side of the instrument and immediately out through the other without lifting out from each other the folds of a bladder, perhaps flabby, atonied, collapsed, and in consequence much of the pus and altered mucus lying in small sacculi, and among the folds of the emptied organ, does not come into contact with the cleansing fluid.

To wash the bladder thoroughly it must be somewhat distended.

The figure shows the instrument in all its parts, with a soft-rubber catheter. This latter style of instrument is the best, on account of its softness, in all cases where it can be made to pass, and is eminently suited to most cases of enlarged prostate, that condition most often requiring a continued use of the catheter, and, consequently, of cleansing injections. The latter not only keep down inflammation of the bladder itself, but also ward off any tendency to the local formation of phosphatic calculus.



The simplicity of the instrument¹ as figured is obvious. To the fountain-syringe A B with bag holding a pint, and tube of variable length, so as to allow, if desirable, considerable pressure by elevating the bag, is attached a two-way stopcock D. Upon the tube is another stopcock C, only useful when

¹ The instrument is exceedingly well made by Mr. Ford, with Caswell & Hazard, New York.

it is desired, having thrown a medicated solution into the bladder, to retain it there for a certain length of time without either allowing the bladder to become over-full, or its contents to escape. The nozzle 1 of the nickeled stopcock D is very large, nearly a quarter of an inch in diameter, and fits snugly into the expanded conical (also nickeled) mouth-piece E. It is so large, and fits so easily, that the most clumsy fingers can readily adjust it almost unaided by sight. Upon this conical catheter mouth-piece is fitted a thin piece of rubber tubing F, covering its upper two-thirds. This allows the mouth-piece to be used with any metallic or other hard catheter, and prevents leakage. The fine conical point of the mouth-piece is to be screwed into any soft catheter before introducing the latter. The other branch H of the two-way stopcock is fitted into a short piece of rubber tubing which conveys the urine and the washings into some convenient receptacle. The catheter (by far the best for ordinary cases of enlarged prostate) is a long, smooth, pink, soft rubber instrument, made in London, by Crohne and Seseman, and marked "Jaques patentee." These catheters are wonderfully soft and smooth, and the only objection to them (except their lack of stiffness for some cases, and lack of calibre for others) is that the eye, being punched out, has no bevelled margin, but is sharp and very apt to scratch unpleasantly during introduction. This objection may be readily removed by bevelling the edges of the eye of each instrument by passing a red-hot wire several times across them.

A brief detail of the manner in which the patient uses this instrument may be useful.

He first prepares the fluid to be injected, eight ounces or more, at a temperature of about 110° F. In several experiments in a room with the temperature at 70° F. I have found that water loses from 15° to 20° F. during the usual delays after its preparation, and while passing through the syringe into the bladder and out again. The bag filled with the warm fluid is hung up about six feet from the floor. The stopcock D is now turned on till all the air is forced out of the tube and a jet of water follows. The instrument is now charged for use, and no subsequent disturbance can make it possible for any air to be thrown into the bladder. Now standing before a stool bearing some receptacle, the patient slowly introduces his catheter, dipped in vaseline,¹ and already attached to the large metallic mouth-piece.

As soon as the urine begins to flow, he immediately couples the large nozzle of the stopcock and the large metallic mouth-piece with which his catheter has been provided, and the urine flows promptly through the short rubber-tube into the vase on the stool before him. When the urine has

¹ Vaseline is better than any other oily substance. It is unirritating, lubricates well, and never becomes rancid; moreover, it does not drop on the carpet or clothes.

escaped, he turns the stopcock D, and the bladder slowly fills. As soon as the organ begins to feel distended, he turns the stopcock again. The simple motion of turning a well-made stopcock does not communicate the slightest jar to the neck of the bladder, while the water flows in and out of the body, obeying the natural law of gravitation, so slowly and quietly that the patient scarcely perceives it.

He may thus wash his bladder very thoroughly four, five, or six times without any change of the instrument or its adjustment, except the simple turning to and fro of a stopcock; and this he does until the water flows comparatively clear from his bladder.

If cold water is to be used, or pressure, or some medicated fluid, this syringe answers as well as in the case of simple washing.

When the surgeon uses the instrument he may roughly calculate how much goes into the bladder in a given time (and, consequently, how much to withdraw when he intends to leave a little in the bladder), by remembering that with the bag hung at six feet, about two-fifths as much fluid will run into the bladder as will flow through the same catheter held at the same height out of the bladder; and in my experiments it has made no difference whether the bladder was atonied or not, about the same amount flowing in a given time into the healthy bladder of a middle-aged man as into the atonied bladder of an old man who could pass only the excess over a residuum of four and one-half ounces.

To sum up concisely, the following are the requirements of a good vesical syringe. The instrument described meets them fully.

1. Simplicity of structure; absence of valves or piston. In short, the instrument should be one which will not get out of order.

2. Capability of throwing a continuous, steady stream, without shock, at a pressure which may be regulated at will.

3. Some contrivance which renders any entrance of air into the bladder impossible.

4. A large nozzle to fit very easily into the catheter mouth-piece without leakage.

5. A smooth, soft, single current catheter with a proper eye.

6. Capability of furnishing repeated successive injections without being refilled, without a reapplication of the instrument, or the necessity of imparting any motion to the catheter.

104 MADISON AV., NEW YORK, Feb. 1875.

ART. IX.—*Case of Intra-Laryngeal Tumour (showing under the microscope mixed characters, principally, however, those of small-cell sarcoma)—in a Syphilitic Subject. Partial Evulsion, Perichondritis, Abscess pointing exteriorly, Fistula of Larynx, Necrosis of Thyroid Cartilage; Tracheotomy; Death; Examination, Post-mortem; Remarks.*¹ By BEVERLEY ROBINSON, M.D., Surgeon to the Manhattan Eye and Ear Hospital (Department of the Throat.)

MICHAEL S., æt. 32, born in Ireland, farmer, 14 years in the United States. When in the United States Army, in 1864, contracted hard chancre. Patient had anti-syphilitic treatment for several weeks after primary lesion was recognized. Since that time rare constitutional symptoms of mild type have manifested themselves.

By careful examination of patient's present condition we have been able to detect but two physical signs of the existence of constitutional syphilis, viz., 1. slight alopecia, 2. a number of enlarged indurated lymphatic ganglia, in different regions of the body. There are no traces of present or ancient syphilitic affection of the integument of the face, trunk, or limbs. As much may be said of the mucous lining of the buccal cavity. Constantly recurring nocturnal pains of osteoscopic character are complained of, and appear to indicate *functional* trouble of specific nature, inasmuch as no tumefaction of bone or periosteum can be detected.

Three years ago patient caught a severe cold, and during five months from above period, has had at times incomplete aphonia. Later, and till a few days before Christmas, 1873, voice remained permanently feeble, and there were few if any intervals when it notably improved. During the latter days of December, 1873, pain localized over region of larynx became a prominent symptom. This has increased somewhat in the past few weeks, and now (May 1st, 1874) is always present. It is made still worse by an attempt to swallow, or a paroxysm of cough. For two or three weeks deglutition has been imperfectly accomplished. Solid substances pass into the stomach with difficulty, and occasionally particles of food get into the larynx, cause cough, and are expectorated for several minutes after a wearisome and insufficient meal is terminated. Liquids are swallowed only after repeated trials, and it is not infrequent to see them rejected in great part through the mouth and nose. The œsophagus is apparently free from disease, and the difficulty of swallowing is due either to the pain which this act occasions, or to loss of healthy function of the epiglottis and pharyngeal muscles, and not to organic obstruction in the passage way of the alimentary bolus. Patient is pale and thin, and has been losing strength daily for about one month. There is, however, no family history which would lead one to suspect tubercular deposit in the lungs, and the signs given by percussion and auscultation of these organs remain wholly negative. The vesicular murmur is partially obscured, it is true, but this is owing to exaggerated sound transmitted from, and which takes origin in, the vocal organ. There is abundant expectoration of white, frothy mucus, and at times the *sputa* are viscous, non-aërated, and resem-

¹ The history of this case, with the accompanying marked specimen of intra-laryngeal growth, was presented to the New York Pathological Society, at a stated meeting, held June 24th, 1874.

ble thick boiled starch. These latter appear to come principally from the pharynx and larynx, as few râles can be heard in the bronchial tubes, and accumulated mucosities are brought into the mouth by an effort of hawking. After slight physical exertion of almost any kind (walking, talking, etc.), respiration becomes noisy, and in a measure difficult, and dryness of the throat is on these occasions a symptom which causes much annoyance. The voice and cough are now broken, husky, and imperfect, and have lost much of their normal strength and pitch. In a word, our patient is incompletely aphonic.

Larynx.—The interior of this organ offers a diseased appearance in its entire area. This aspect, as shown with the laryngeal mirror, is, as nearly as possible, expressed by the term *fungoid*. First, and most prominently, there is a large, pinkish, mammillated growth situated on the right side of the larynx.¹ This growth fills up about two-thirds of the superior opening of the larynx, and has a broad base attached to the greater portion of the right ventricular band. It extends as far forward as the anterior commissure, but leaves a small orifice behind its margin and the posterior commissure. The size of the growth is about that of a very small hazel nut, and conceals from view in great part the right vocal cord. The mucous membrane covering the arytenoid cartilages is red and swollen, and the submucous tissue infiltrated. Upon the superior surface of the right arytenoid cartilage is a single ulceration. Below the left vocal cord is a second neoplasm as large as a lentil, irregular in outline, and apparently of similar structure to the one first described.

It springs from the left side of the cricoid ring. The vocal cord and ventricular band on the left side, have a pinkish coloration, and in their entire extent a mammillated appearance, with numerous points where evident ulcerations are situated.

What was the vocal cord and ventricular band on this side, viz., the left, is now covered with, or included in, morbid tissue. The posterior commissure is very much thickened.

Such was the condition presented by the interior of the larynx during the ordinary movements of inspiration and expiration. During an effort of phonation the first and larger growth obstructs the lumen of the larynx completely and presents the approximation of the vocal cords, or, more properly speaking, the layer of morbid tissue in which these fibrous bands are comprised. Both arytenoid cartilages rotate partially, and so far as they are doubtless able to do, having in view the mechanical obstruction due to the presence of a tumour on the right ventricular band, and having also the thickened condition of the index-arytenoid commissure. The crico-arytenoid articulations are not, therefore, if we consider the evidence furnished by the laryngeal mirror, in a diseased condition.

Treatment.—Inhalation tinct. benzoini comp. (5j-3j) several times in twenty-four hours. As nourishment a thick mixture of essence of beef, yolk of eggs, and oatmeal porridge.

May 5. Patient admitted into the Manhattan Eye and Ear Hospital. On this and following days, several partially successful attempts were made by my friend and colleague, Dr. Andrew H. Smith, and by myself, to tear away the larger of the two growths in the larynx. Bits of the

¹ The exact point of origin of the neoplasm could not at first be determined, but in later examinations it was seen to arise from the right ventricular band. The necropsy confirmed the accuracy of this diagnosis.

growth were brought away by one of us on these occasions by means of Mackenzie's antero-posterior cutting forceps. The successive operations were well supported, caused but moderate pain and little or no hemorrhage subsequent to the evulsion. Anti-syphilitic treatment was employed, viz., frictions over region of larynx with unguent. hydrarg. and administration of potass. iodidi externally. Applications of cupric sulph. (gr. xv- $\bar{3}$ j) and insufflations of iodoform were made more than once, and apparently with some good effect, to the interior of the larynx.

12th. Has evidently improved; deglutition is more easily performed and without being followed, as a few days since, by regurgitation through the mouth or nasal passage. The breathing, which previously became noisy after the slightest exertion, is now more tranquil under similar conditions. The voice is somewhat stronger; localized pain has not diminished, and on examination of the region of the larynx, considerable redness and tumefaction are seen, which we ascribe to irritation caused by the mercurial frictions. These latter were stopped, and poultices ordered to be applied and frequently renewed; the size of larger growth has considerably diminished, and at present more than one-third its original volume; the pulse continues weak and accelerated; the thermometer in the axilla was found to mark $100^{\circ}.2$ Fah. (May 5th), and has varied but little since.

23d. Patient having failed to show himself at hospital, he was visited to-day at his house by Dr. A. H. Smith and self, and found ill in bed; he is very weak and much emaciated; has suffered from diarrhœa, which happily is now arrested; for seven days he has been able to take very little nourishment, owing to extreme soreness over laryngeal region; during afternoon he was again transported to Manhattan Hospital in a carriage; on his arrival there attempts were made to examine the larynx; on account of great intolerance of mirror the inspection of the vocal organ was imperfect; yet it was evident that the upper orifice of the larynx was still considerably obstructed by what remains of the growths already described, by neighbouring thickening of mucous membrane and by submucous infiltration; discharge of muco-purulent character lines the interior surface of the larynx.

Externally, an abscess of considerable volume was immediately recognized. It was situated over region of thyroid cartilage, and pointed somewhat towards median line. When opened by a vertical incision one-half inch in length, two or three teaspoonfuls of fetid sanious pus came out, or were pressed from the interior of the pyogenic cavity. Mingled with the pus were several air globules. The existence of these latter was explained by the decomposition of pus, which doubtless had its origin in the perichondrium covering the thyroid cartilage.

With the probe considerable burrowing on the left side of the neck (two inches) was made apparent. On the right side there was less separation of the skin from the soft parts beneath; no necrosed points of cartilage were discovered after a tolerably thorough examination; a strip of lint was introduced by the external opening of the wound, and instructions were given that the cavity should be washed during the evening with carbolic lotion. The incision of abscess relieved patient of much pain. Beef-tea, milk, egg, brandy, were prescribed in such quantities as patient might wish to partake of them.

24th. Breathing is frequent and noisy, but without great difficulty or oppression; passed a restless night; with probe necrosis of thyroid cartilage in neighbourhood of anterior insertion of vocal cords is discovered,

and after some search a point where there is a small orifice communicating with the interior of the larynx; introduction of probe by this orifice occasions a paroxysm of painful cough. When patient closes his mouth and nose he can blow air from lungs through the fistulous opening; skin is still hot; pulse 108; less fever, however, than yesterday; moderate discharge of fetid pus from wound; diminished soreness on pressure; skin has adhered in part on both sides of wound to soft tissues beneath; cough very troublesome; expectoration at times of muco-purulent sputa, tolerably tenacious, and again of a white, frothy liquid; less viscous and adherent. There is but little blood mingled with sputa; milk taken was vomited as a heavy, solid coagulum. Ordered liq. morph. sulph. \mathfrak{z} j at bedtime, to be repeated if necessary. Mist. expect. (ipecac, acacia, etc.) \mathfrak{z} j occasionally when the cough is troublesome; liquor calcis mixed with milk (\mathfrak{z} ss- \mathfrak{z} iv), jelly, port-wine, egg, milk, beef-tea, etc.

26th. Temperature $101^{\circ}.2$ Fah.; pulse 112; expectoration easier; passed a good night; taken a tolerable amount of food; fistula patulous, as yesterday. When patient coughs, air passes freely by orifice. Ordered suppositoria c quinae sulph. gr. iij three times a day.

27th. Pulse 108; weaker; coughs continually; abundant viscid expectoration; has taken very little nourishment; great thirst; one motion of bowels; cold, clammy, and very excessive perspiration.

31st. During the evening the patient was suddenly attacked with intense dyspnœa. Dr. A. H. Smith, who was immediately sent for (as I was absent from the city), found patient breathing with less difficulty than he had done a short time previously. Deeming it prudent, however, to prevent a possible recurrence of dyspnœa, and the hour (11 o'clock P. M.) being unfavourable for a major operation, he enlarged the wound somewhat, and excised a small portion of the left thyroid ala, where it was necrosed. Patient breathed more easily after the operation, and passed the night with relative comfort.

June 1. About mid-day patient took ether. So long was he in being sensibly influenced by it, that a moderate proportion of chloroform was used so as to produce complete anæsthesia. The operation of tracheotomy was then successfully performed by me, aided by Dr. Smith. No large vessel was divided. There was, however, moderate hemorrhage after the introduction of the canula.

2d. Doing about as well as could be expected yesterday afternoon; the expectoration alone, by its abundance, giving legitimate cause for immediate anxiety. He passed a restless, feverish night, and enjoyed little or no sleep. No nutriment was taken, so great was the pain occasioned by the effort of deglutition. This morning at 5 o'clock A.M. the canula became stopped up with viscid phlegm, and patient was nearly choked to death before efficient aid could be given by the nurse in attendance. The canula caused much pain, and liquids, when swallowed, pass into the larynx and trachea in part, and are thrown back after cough or violent expiration through the wound and tracheal tube. Pulse is irregular and very feeble; respiration very frequent. Since early morning has taken but a small quantity of beef-tea and milk.

3d. Yesterday in the afternoon a consultation was held with Dr. A. H. Smith, and it was determined that the operation of thyrotomy should be performed, and that after complete separation of the alæ of the thyroid, the interior of the larynx should be rid, so far as possible, of the morbid growths contained therein; that explorations should be made to find out

the exact situation and limits of the processes of necrosis, and that whatever portions of dead cartilage were to be got at, without increasing the already very serious condition of the patient, should be removed, and that afterwards, supposing no incidental circumstances were to arise and counter-indicate such treatment, the canula should be withdrawn, and the implicated parts brought together by means of stitches. Such was the plan of procedure adopted after much reflection, and it was, in reality, the only one left us if we were not prepared to stand by quietly, and see death follow surely and promptly.

Unfortunately the impressibility or weakness of the patient was such that we found ourselves obliged to forego carrying out the above indications.

On two successive occasions, all proper precautions being exercised, an attempt was made to bring the patient under the influence of chloroform. Inasmuch, however, as alarming symptoms manifested themselves after but a few inspirations, the inhalation was considered too hazardous to be continued. The idea of any further operative measures was then definitely abandoned, and it was believed that, if persisted in, they would cause an immediately fatal result to the patient.

The pulse and respiration increased in frequency during the afternoon and evening, the patient taking little or no nourishment of any kind. His strength failed him more and more, and, sinking gradually, he died at 11½ o'clock P. M. (June 2d), the proximate cause of death being the clogging up of the smaller bronchial tubes by an excessive amount of muco-purulent secretion.

Necropsy (June 3d), fifteen hours after death, was confined to the larynx, as circumstances did not admit of further examination. Upon dissection of soft tissues, so as to separate the larynx from the adjacent parts, and take it out completely from the cadaver, no burrowing to any extent in cellular tissue under the skin was remarked, and apparently the cavity of the abscess, opened into some days previously, had become almost if not entirely obliterated. After separating the intrinsic muscles of the larynx in front from the alæ of the thyroid cartilage, a considerable part of the right ala, in the neighbourhood of its lower margin, was found to be without perichondrium; bare and rough to the extremity of the probe. In fact, there was evidently a condition of necrosed cartilage at this level. On the right side the soft tissues presented a greenish aspect, due to putrefactive changes. In this direction, also, there was distinct proof of fistulous burrowing previous to death. The left ala was less diseased *in front* than the right, and no portion of this region was bare, or showed detached perichondrium. The fistulous orifice communicating with the interior of the larynx, which had spontaneously shown itself before death (after incision of the abscess mentioned in the history of the case), and which had been enlarged by Dr. Smith, was situated just on a level with the anterior attachment of the vocal cords and ventricular bands. The larynx having been laid open from behind on the median line, a good view was obtained of its interior. The following is an accurate description of its appearance: The free border of the epiglottis was but little affected. It was free from ulceration, and only very slightly thickened. Considering the age of the patient (thirty-two years), the yellow coloration of the fibro-cartilage was more apparent than usual. The base of the epiglottis—and, in fact, the general aspect of the larynx when looked into from above—to be expressed by a term which nearly

approaches accuracy, is *fungoid*. So true is this word to the idea in the mind, that the question immediately suggests itself, have we not here a malignant growth of carcinomatous structure? To particularize—the inferior two-thirds of the epiglottis, the ary-arytenoid folds, the posterior commissure, and the mucous covering of the arytenoid cartilages, are all much thickened, and offer a very light pinkish coloration. At the base of the epiglottis, to the right, is a round, somewhat mammillated growth about the size of a large pea, adherent to the mucous membrane by a broad base, of almost equal diameter to the prominent portion of the growth. The rest of the posterior surface of the epiglottis which we are considering, viz., the inferior two-thirds, presented mammillary elevations due to smaller pathological formations of same nature with the preceding, alternated with depressions occasioned by ulcerations of lenticular configurations. One of these presented a yellow fundus, which was none other evidently than the fibro-cartilage of the epiglottis. The ary-arytenoid folds and mucous membrane lining the arytenoid cartilages presented several points of ulceration.

One of these ulcerations, isolated and very distinct in outline, is situated on the superior aspect of the mucous membrane covering the right arytenoid cartilage. Lower down, what remains of the growth spoken of in the history of the case, is distinctly seen to take its origin in the right ventricular band, and to cover over and conceal from view almost entirely the right vocal cord.¹ The left ventricular band and left vocal cord are very indistinct in their outline and barely distinguishable, on account of infiltration of their mucous lining, with deposit of similar structure to what forms the neoplasms described. The lumen of the larynx is diminished, but not sufficiently to account by itself for the intense dyspnoea which came on suddenly, during the evening when Dr. Smith enlarged the fistula of the larynx.²

At the posterior wall of the larynx, and on either side, is a fistulous passage which extends for some distance amongst the soft tissues which laterally are in relation with the cricoid cartilage. This cartilage is much diseased in the superior half of its posterior wall.

Upon section this portion presents a dark-brown coloration of the cancellated portion of what has evidently become transformed into osseous structure. From this portion of diseased cartilage the fistulous orifices and trajects mentioned, take origin. The lower half of the cricoid cartilage appears healthy.³ Below the inferior border of the cricoid cartilage the tracheal wound is visible in the median line. The mucous membrane at one point to the right and behind—on a level with the inner extremity of the canula—is ulcerated, and offers evident marks of inflammatory processes in the immediate neighbourhood. Elsewhere the mucous membrane of trachea shows numerous congested spots. One or two of the tracheal rings, especially on the left side, for about one or two lines, are broken and

¹ Before evulsion was commenced, this growth extended below the right vocal cord.

² This dyspnoea is doubtless sufficiently explained by sudden spasm of the adductor muscles, or else by sudden obstruction of the calibre of the larynx, with viscid and purulent secretion, coming from the bronchial tubes.

³ The point of origin of disease of cartilage, as perichondrium is not evident. Did chondritis, as perichondritis develop itself first in thyroid, or cricoid cartilage? Impossible to affirm positively from ocular examination.

bent backward into the tracheal passage and the wound of the trachea, though on the median line and made with a single incision of the bistoury, is irregular on its margin—as if notched, and a portion of the tracheal rings had been removed, by two or more incisions, made in different directions.¹

*Note.*²—Appended to this microscopic examination, are the characters discovered with the microscope, and which have been given me by CHARLES S. BULL, M.D., Pathologist to the Manhattan Eye and Ear Hospital.

“The growth is mostly of a fibro-cellular structure with the cells largely predominating—in fact there seems just enough of fibrous connective tissue present to hold it together except towards what looks like the base of the tumour, where it is somewhat more abundant. Only in isolated spots on section did I meet with any epithelial cells covering the surface. The mass of the growth is composed of small, round, nucleated cells, with granular contents, about size of a pus corpuscle. There were some few fusiform, or caudate cells scattered through the tumour, and near the base they were quite numerous, being arranged together as we see them in a true fibro-cellular growth. There were some larger ovoid cells, few in number, about twice or three times the size of the round cells, with nucleus and nucleolus. The numerous bloodvessels proved the growth to have been somewhat vascular. I could not find any remains of glandular tissue, and though the tumour resembles very closely a lympho-sarcoma, yet there were spots, or vacuoles, which we meet with in the papillomata, which were filled with a homogeneous mucous matter, giving the appearance of a myxo-sarcoma. The centre of each piece of the tumour was much softer than the outside.”

“To sum up the examination, I should call the growth a small-cell sarcoma, towards the base being of the fibro-cellular variety, while the rest of the growth is of a myxo-sarcomatous character.”

Subsequently a communication was received from Dr. Bull, as follows:—

“The perichondrium was very much thickened, and seemed to be much denser in structure than is usual. The cartilage itself was very hard, and to the touch and naked eye gave the impression of being ossified. A microscopic examination showed a very marked hypertrophy of the connective tissue of the perichondrium, and a very general infiltration by the same round and fusiform cells that existed in the neoplasm. The vascular development was marked, and in some spots there occurred masses of pigment of irregular shape and size, lying free in the connective tissue, while occasionally some was found inclosed in the cells.”

Remarks.—There are several points of undoubted interest connected with the above case. And this interest is at once practical and theoretical; practical, inasmuch as the question of diagnosis and treatment

¹ We would draw attention to the fact, that the smaller growth situated under the left vocal cord, of which we speak in the history of our case, is not mentioned in the microscopic description, as made after death, and with the morbid specimen before our eyes. This smaller growth is no longer visible. What has become of it, we cannot assert positively. Was it torn away in great part, in our last operation within the larynx, by means of the laryngeal forceps, and what remained behind, afterwards expectorated with secretions from the bronchial tubes? Such is the probable explanation, and we remember to have seen a like phenomenon occur in an analogous case.

² The other organs could not be examined, owing to opposition met with on the part of relatives of the deceased.

should be considered; theoretical, because such a case is rare in some respects, not to say unique, and leads one naturally enough to propound certain questions, the answers to which must be more or less based upon hypotheses, and not, as we could earnestly wish, upon the fair interpretation of many similar or analogous facts. First, with regard to diagnosis; when we had thoroughly examined our patient, and had duly considered his previous history and the signs presented in his person, we came to the conclusion that the intra-laryngeal growths were of a syphilitic nature, and required specific treatment. Acting upon this idea, mercury and iodide of potassium were immediately put in requisition, and administered after what seems the most rapidly efficacious manner; but apparently with no result, so far as arresting any threatening symptoms or producing reabsorption of tissue was concerned. And here, to be candid, and in making our acknowledgment give a lesson which may prevent others from being guilty of like neglect, we should say that a microscopic examination of the portions of growth brought away with the forceps was not made till death supervened. In some cases such oversight or negligence might prove detrimental to the patient's future cure. In the one we are considering, we do not believe that the treatment should have been modified had we been aware in advance of the revelations which the microscope made known to us after death. The syphilitic infection was affirmed by the patient, and further corroborated by some few signs found upon his body at the time he put himself under our care. In a like position we would ever feel disposed to make use of specific remedies in properly managed doses, until one of two circumstances might arise: first, a manifest *intolerance* should show itself to the medication employed; second, a wholly *negative* action were to be made evident. In either of the above alternatives we would abandon, naturally enough, the method first adopted, and seek after a wiser and more efficacious manner of treatment. Had no signs at all of constitutional syphilis been visible in the case reported, or which we could fairly attach to its existence, still we believe that looking merely at practical results, anti-syphilitic treatment was the one at first indicated. On more than one occasion already we have known of or seen patients who, with a past history of an indurated sore, have never from that time forward offered symptoms which a well-informed practitioner would feel justified to term syphilitic. At a given period, however, morbid signs became apparent in some organ or tissue of the frame, against which divers therapeutic agents were tried in vain. Specific remedies were then employed, and rapidly beneficial results have followed their use. The influence, it is true, of a constitution tainted with syphilis in becoming the source, as it were, of laryngeal growths in general, has not as yet been accurately determined. Some whose names we could cite, whose authority stands highest on this subject, would have us believe that polypi of the larynx are no more frequent in syphilitic subjects than in others. On the

other side, we find those who affirm that syphilis has a direct and evident influence in producing laryngeal growths. With these latter, sarcomatous and other malignant growths are apparently no more excluded from manifesting this influence than are papillomata with a like situation.

For us who believe in the utility of specific treatment in *some* cases, where legitimate doubt may be attached to its existence, if symptoms alone be considered, the wisdom of its adoption is not assailed by any revelations made with the microscope. In considering the diagnosis, the question was asked whether or not our case was one of laryngeal phthisis. It was at once eliminated. The family history of our patient was more than usually good; no member of it had ever suffered from any serious affection of the chest, and the aspect of the larynx, as shown with the small laryngeal mirror, was such as to do away entirely with even a suspicion of that condition. True it is that the great emaciation of the patient during the last few weeks of his life, his abundant expectoration, and occasional complaints of pain in the left side of the chest, were symptoms which might have occasioned anxiety with regard to the condition of the lungs. But there were so many signs, both physical and rational, absolutely wanting in order to permit one to pronounce the word tubercular with any degree of probability, that the mere idea was never for any length of time entertained.

A few cases analogous in many respects to our own have occurred in the practice of Mackenzie, Türk, Cohen, etc., and it may very plausibly be sustained that a professed specialist in throat diseases is bound to be familiar with these examples, and prepared to encounter and recognize similar ones. And further, it may be added in a general way, that if medicine shall ever be ranked amongst the exact sciences, such trust can be hopefully cherished by her votaries only when exact observation of every fact, clinical or experimental, becomes for them an imperative law. When, however, there is a dearth of special facts, and detailed histories of those placed on record are wanting, allowances can properly be made for not detecting features of a portrait at no time fully drawn. Such, in a certain measure, is the story thus far of sarcomata of the larynx. The symptoms peculiar to them are not fully known, and according to Paget "it would be wrong to draw many conclusions from so small an experience as yet exists of these tumours." Mackenzie states in his work on laryngeal growths (London, 1871), "fasciculated sarcomata constitute a variety of growth, which is comparatively unfrequent in the larynx, only three cases having come under my notice, and there being but six amongst the cases treated by other practitioners." So far as we are aware, no other case of similar structure to those just mentioned has been recorded since. If we may put faith in our researches, we should be allowed to assert that our own case is rarer still, for we have not been able to find a single case of small-cell sarcoma of the larynx (and this is mainly the microscopic

feature of the growth so accurately described by Dr. Bull) reported in any one of the late medical publications. With one exception, too, all the cases of spindle-cell sarcoma mentioned in Dr. Mackenzie's exhaustive treatise occurred in patients older than ours.

Beside, the symptoms manifested by our patient up to a very late date were hardly such as to justify a belief in the presence of *any* kind of malignant growth. And here the microscope would appear to be at fault, for it "cannot be relied on for differential diagnosis." "Several cases have come under my notice," writes Dr. Mackenzie, "where the histological features were decidedly those of cancer, whilst the clinical history was of a totally opposite character, and *vice versa*." The above remarks and citations absolve us fully, in our estimation, for not making the diagnosis of *small-cell sarcoma* in our case previous to death. In the instance related, the course of disease cannot be considered very remarkable. Where chondritis, or perichondritis, has followed trouble of a purely inflammatory character, or what is more frequently true, ulcerations caused by laryngeal phthisis, or by syphilis, we read that the abscesses formed, in the majority of cases, point inwards. Sometimes, however, as in the case reported, pus is found in the neighbourhood of the external perichondrium of the thyroid cartilage, and finally makes an exit for itself by a fistulous opening through the integument. It frequently happens also, as in our case, that the surgeon in charge, by a timely incision, allows the abscess to empty itself many hours before it otherwise could.

This is the prudent course to adopt, for in this way and through proper after-treatment the disease of the cartilages may be prevented from extending, or a permanent fistule opening exteriorly (the consequence of blamable procrastination) be entirely avoided.

The abscess pointing outwards appears to us a more desirable state of things than the condition where it becomes prominent internally, and is readily visible with the aid of the laryngeal mirror. Then great dyspnœa and occasionally suffocation are produced before the abscess bursts or is opened. Subsequently, as we are aware, there is imminent risk of life resulting from sudden obstruction of the larynx or trachea by a piece of necrosed cartilage, unless the whole of the diseased portions be removed, and this very often is an almost impossible task. In a case related by Rokitsky, which has become famous, the anterior perichondrium of the thyroid cartilage had become affected, an abscess formed in the subcutaneous tissue which gave rise to a fistule, and emphysema of the neck ultimately followed.

We happily enough had not occasion to observe this unfortunate consequence of a similar condition with that noted in our case. Whilst in this latter the mobility of the epiglottis was much impaired, as proved by the particles of food which entered the larynx, we did not perceive "the deep

red, shiny colour," nor "a much enlarged, elastic swelling of the epiglottis" as described by Tobold, "when the thyroid cartilage is attacked."

Our history is then an exception to a rule admitting of but few. The post-mortem examination has proved to us that had we been able to carry through our purpose, when thyrotomy was determined upon, we would not have been able to take away the whole of the diseased parts without extirpating the larynx.

In view of the late unique case of Professor Billroth, where the larynx of a patient suffering from malignant disease of this organ was successfully extirpated, we may ask, would this operation have been justifiable in our own case? We do not believe it would. When thyrotomy was contemplated our patient was very weak, so much debilitated in fact that the propriety of laryngotomy could not be immediately resolved upon. The chances then of his surviving a more radical operation, and of necessity one in which considerable loss of blood must have been the consequence, were infinitely small. Even had his general strength been greater, we do not at present feel that it would have been indicated. For if we have regard to the very little, if any, permanent improvement in his breathing which followed tracheotomy, and consider the nature of the laryngeal growths, there is good reason for believing that secondary deposits had already been made in the lung tissue, which would have made ultimate cure an impossible result. And now if we examine carefully the experiments of Czerny (1870) on dogs, and the later more startling experiment of Prof. Billroth on man, we do not feel fully persuaded that extirpation of the entire larynx is as yet an operation which should be performed on the human subject in any case.

All the dogs operated upon by Czerny died within a short period of time subsequent to its performance, and by the last accounts from Vienna, recurrence of malignant growths in the bronchial tubes of Prof. Billroth's patient was rumoured abroad, and believed in by many of those best informed about matters in the Allgemeines Krankenhaus.¹

We do not desire to place an absolute damper upon the spirit which dictates such hazardous surgical methods, but we would have it properly tempered with thoughtful reasoning, in regard to intercurrent and future suffering and dangers, to the poor fellow subjected to very bold personal initiative.

In surgery, as in most other things, it would be well in practice not to allow the golden rule to become obsolete.

Finally, we wish to consider some point in connection with the morbid anatomy of our case. The growths had their origin doubtless in the sub-mucous layer, and afterwards implicated on one side the mucous membrane, on the other the perichondrium of the cartilages.

¹ Since writing the above, Prof. Billroth's patient has died of lung disease of carcinomatous nature.

They are of undoubted malignant structure, which is shown partly by the number of small cells that enter into their composition, partly by their soft consistence and vascular nature.

More malignant are sarcomata of this kind, according to Virchow, than those of firmer consistence where fusiform cells greatly predominate. One of the characteristic clinical features of all varieties of sarcoma is to extend locally in the tissue, as matrix where they have first taken root, and to recur, more or less *in situ*, after removal.

These facts will account for the appearance of the larynx internally, where nearly the entire mucous lining and submucous connective tissue were incorporated in the sarcomatous growth, and for the differences which exist in the description made of it before and after death.

But the malignancy of sarcomata is not alone made apparent by their great tendency to extend locally; they are also rapidly reproduced in the internal viscera. Transmission takes place through the bloodvessels, and the small cells make their way more readily into the bloodvessels than the larger fusiform cells. In no one of the internal organs do they reproduce themselves more frequently than in the lungs. Our belief, therefore, that the lung tissue of our patient was already invaded at the time of his death, with secondary growths, would appear to be highly probable. The lymphatic vessels and ganglia are rarely infected. This differentiates sarcomata with cancers, properly speaking, where dissemination takes place by the lymphatics—at least in the earlier stages of the disease.

Let us note that, in the history of our case, mention is not made of the lymphatic vessels or ganglia of the neck.

Our attention, in fact, was not directed towards them for the simple reason that they were seemingly in a normal condition.

The condition of the perichondrium and cartilage of the larynx should attract particular attention, because—1st, the apparent ossification of cartilage to both eye and touch is noteworthy when we consider the relative youth of the patient (thirty-two years)—for though ossification of cartilage is not infrequent, as we are well aware, yet it usually becomes evident at a more advanced age. In this instance our belief was (till histological examination made us sceptical), that this change had been rapidly produced by, and was wholly due to, the inflammatory processes, which will in older patients bring about such transformation after a brief lapse of time.

But after the revelations of the microscope that a portion at least of the cartilage, and more particularly the posterior portion of the cricoid ring which had a brown coloration, was infiltrated with sarcomatous cells and interspersed with masses of pigment “lying free in the connective tissue, while occasionally some were found inclosed in the cells,” we were and are in doubt.

We do not know how far the growth itself may have been the cause of this change.

2d. Pathologists have thus far been of the opinion that sarcoma does not invade cartilaginous tissue. Our case distinctly proves the error of such absolute assertion.

Further: This question presents itself: Did the laryngeal growth have its origin in the mucous or submucous layer (as is very common, and as we have taken for granted in these remarks already before receiving Dr. Bull's later communication), or did it really begin in the cartilaginous tissue, of which many of the normal cells were found to be atrophied or to have disappeared altogether?¹

The reply to this, it is perhaps impossible to give at present in a very decided manner. Still the great thickening of the perichondrium, and hypertrophy of its connective tissue, the density and resistance of the cartilage itself, taken in connection with "the marked vascular development and general infiltration of the same round and fusiform cells that existed in the neoplasm," render the latter hypothesis, to our mind, more than probable.

15 West 26th Street, New York.

ART. X.—*Epithelioma of the Larynx; Stricture of the Œsophagus, Ventral Hernia, Abdominal Tumour, and Pendulous Belly; Operation; Death.* By SAMUEL C. BUSEY, M.D., one of the Physicians to the Children's Hospital, and Physician-in-charge of Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C. (With two wood-cuts.)

IN June, 1874, I was requested to see Mrs. M., widow, white, æt. 74, who was suffering from complete aphonia and dysphagia. The aphonia had its beginning in a severe cold four years previously, slight at first, but gradually and continually growing worse, became complete during the winter of 1873-74. The dysphagia, now so complete that but little solid food could be taken, and only very slowly and with very great difficulty, began long after the loss of voice, and only seriously interfered with the natural function, during the past six months. Dyspnoea was very marked. Inspiration and expiration were noisy and laboured, yet oxygenation seemed complete. She weighed about 200 pounds, was very fat, could walk but a few steps without assistance. Complains of loss of power in the lower extremities, and inability to maintain the erect posture, yet usually sat most of the day in an easy chair, and slept comfortably in a semi-recumbent posture. Appetite good, and notwithstanding the difficult deglutition,

¹ Oral communication from Dr. Bull.

she took sufficient food. Was cheerful and very anxious to be cured of the aphonia, which a physician had informed her was due to thickening of the epiglottis and would eventually prove fatal. For a number of years she had suffered from ventral hernia, and recently, in consequence of a sudden attack of severe pain to the right of the umbilicus, had discovered a tumour in the abdomen. It was hard, movable, oblong, very firm, and but slightly sensitive. To these unfavourable symptoms were added the annoyances of a pendulous belly, which hung in an immense fold over the pubis, subjecting her to the constant irritation and excoriation of the opposing cutaneous surfaces.

A few days subsequent to my first interview, accompanied by my friend Dr. Charles E. Hagner, a laryngoscopic examination was made, resulting in the discovery of a tumour attached to the right vocal cord. The patient insisted that an effort should be made to remove it, and assured us she was quite equal to the undertaking. Having removed to the country for the summer, we decided to defer any operative procedure until her return to the city. During the months of July and August, the dysphagia and dyspnœa gradually increased, the latter seeming occasionally to be somewhat ameliorated under the treatment with astringent atomization, but the dysphagia progressed uninterruptedly until only liquids in very small quantities, a few drops at a time, could be taken with very great difficulty and very slowly. Attempts to swallow usually produced violent and alarming paroxysms of dyspnœa. About August 20th, she was seized with bronchitis, which under treatment by inhalation improved, but never entirely subsided. From this time she lost strength and flesh rapidly, and the paroxysms of dyspnœa became so frequent that her friends insisted that some effort should be made to relieve her suffering.

September 9th, I invited Dr. Drinkard to see the patient with Dr. Hagner and myself with the view of revising the diagnosis, and to determine the proper remedial resource. The growth springing from the right vocal cord, ulcerated at its apex and perhaps malignant, was readily recognized, and the conclusion was unanimous that laryngotomy or tracheotomy furnished the only hope of relief. It was deemed injudicious to make any attempt at operation through the mouth, because of the irritability of the fauces and pharynx, her enfeebled condition, and the manifest danger of asphyxia. The expediency of an immediate attempt to extract the tumour, after relieving the respiration by either of the proposed operations, was held in abeyance. The friends of the patient were fully advised of the certainty of death unless perchance success should crown the attempt, of the imminent danger attending the operation, of the more than probable failure of securing any permanent relief, and that there was but the bare hope that her distressing breathing might be relieved, and if nutriment could be supplied, life might be prolonged. On the 10th, Dr. Drinkard performed tracheotomy, a description of which I give in his own language.

"By the courtesy of Dr. Busey, I was entrusted with the operative manual in the case forming the subject of his present paper, on the afternoon of September 10th, assisted by himself and Drs. Eliot, Mackall, Hagner, J. T. Young, W. W. Johnston, and Ramsey—all of these latter gentlemen having coincided in the propriety of tracheotomy as a last resort for prolonging life, and as affording a possible chance for further operative interference in case circumstances should be found to favour it. With this idea in view, it was at first determined to make the incision—that of laryngo-tracheotomy—extending it through the cricoid cartilage and the upper

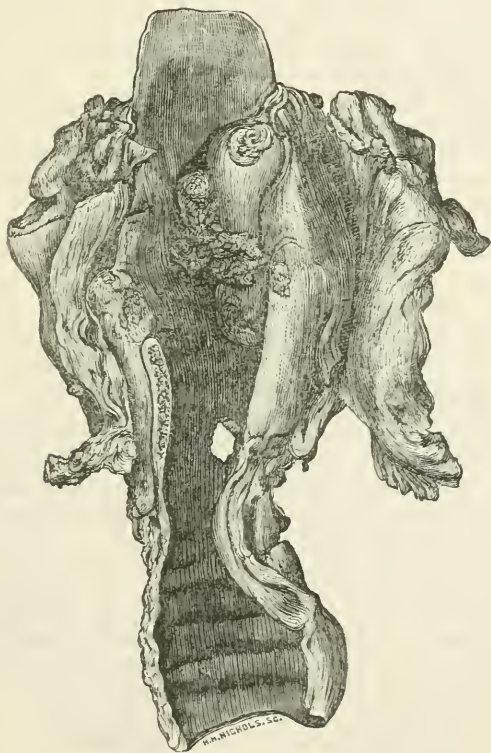
rings of the trachea—a plan modified from the necessity of the case during the operation—as will be seen. The general sentiment of the gentlemen in consultation being against the use of any anæsthetic, none was employed. The cutaneous incision having been made, corresponding to that desired to be made in the larynx and trachea, the subcutaneous tissues were found to be of unusual depth—the neck of the patient being short, thick, and fat—and the vascular engorgement was so considerable that each attempt at dissection or incision of the tissues was followed by a profuse flow of venous blood, washing the parts and retarding the operation to a very annoying extent. The evidently insignificant laryngeal breathing space possessed by the patient, and her actually advanced condition of slow asphyxia, rendered it essential to guard, if possible, against any considerable influx of blood through a tracheal opening; and the clearing away of the tissues over the trachea was proceeded with very slowly, the flow of blood being controlled at each step so far as time permitted. The trachea having been finally denuded, and the hemorrhage apparently checked, an incision was made through the two upper tracheal rings—it being considered that there was a better chance of completing the incision rapidly, by making the lower part first and extending it upwards, than by commencing it at a cricoid cartilage possibly well advanced towards ossification. Theoretically correct, this method of incising was within a very little of causing the patient's immediate death. At the moment of penetrating the trachea, the usual convulsive and deep respiratory movements took place coincidently with the unloading of the venous turgescence about the parts, and a literal inundation of blood over the dissection and into the tracheal opening—the only guide to which now was the hook in the crico-thyroid membrane. The sudden and excessive hemorrhage, with the struggle of the patient at the moment of suffocation, precluded the idea of any deliberate attempt at enlarging the incision upwards—the patient being to all intents and purposes perfectly lifeless—the point was to get the tube in by enlarging the incision in any way possible. This was done in a direction downwards, and as the patient was being raised up in bed by the assistants. Guided by the trachea-hook the knife was carried into the first opening (as was thought really by the side of it), and the incision prolonged downwards through the trachea.

“Calculation having been made only for the passage of the knife and not for the necessary movement of the patient, it was evident, as the tube was passed in, that the tracheal opening was much longer than intended; though, as demonstrated afterwards, hardly too large for the requirements of breathing. During the few moments necessary to complete the operative manual as described, there was that amount of condensed anxiety which has no need of description for those who have witnessed moments of suspended animation during surgical operations. Until the tube was fairly in the trachea, and a few vigorous movements of artificial respiration had cleaned this latter of the blood that fairly filled it, the patient's life was not only questionable but actually in abeyance; and nothing but the prompt and perfect co-operation of the gentlemen assisting in aiding and maintaining respiration by position, artificial respiration, and faradization, could have brought about the final result of resuscitation and easy breathing. The tube (although the larger sized infant tube), was too small for the incision and too short for the depth of the trachea from the surface; it slipped out once, shortly after the operation, but was easily replaced, and by attention to the patient's position, kept in the trachea.

"An hour after the operation the blood had ceased to ooze from the wound, and the breathing was evidently much easier than it had been for two days. It was noticeable that any attempt to close the wound around the flange of the tube, and thus restrict the breathing space to the calibre of the tube, brought on distress, difficult breathing, and breathing through the glottis; while perfect patency of the wound allowed the patient much more ease in respiration—the air passing wholly and freely through the tracheal opening."

The patient passed a quiet and apparently comfortable night, occasionally sleeping quietly and calmly. Several efforts were made to take liquids, but very little if any was swallowed. She retained the sitting posture, with her head slightly inclined forward. In no other position was respiration easy. Nourishment could not be supplied by the mouth. Injections of brandy and beef-tea into the rectum, and hypodermic injection of whiskey were resorted to, but her strength gradually failed, and she died at 6 A. M. on the 12th.

Fig. 1.



Cut from drawing by Dr. McConnel, showing the growth in the larynx. Specimen No. 1221
Army Medical Museum, Med. series.

At the *post-mortem*, made a few hours after death, it was impossible to pass a sound (or even a No. 9 catheter) into the œsophagus, even after separating the trachea from the œsophagus; not that the calibre of the

canal was too contracted, but an intervening septum shut off communication with the pharynx. The larynx being laid open was found to be occupied for nearly two-thirds of its cavity by a tumour, lobular and granulated in appearance, slightly excoriated at one or two points, and springing from the right vocal cord. In extent, it reached from the aryteno-epiglottidean fold to the lower limit of the sacculus, pushing forwards beneath and by the side of the epiglottis towards the hyoid bone. The part of the tumour which had been most plainly visible during the laryngoscopic examination sprang as a semi-detached lobule from the main body of the tumour, at the level of the superior vocal cord, extending upwards towards the root of the epiglottis in the median line, and sending a prolongation below into the ventricle of the left side, so that the glottis was almost obliterated except at its posterior third, leaving a passage sufficient to admit a crow quill on approximation of the arytenoid cartilage. The lower part of the tumour filled up and dilated the ventricle and sacculus on the right side.

The length of the incision was one inch and one-sixteenth, seven-sixteenths of an inch, by accurate measurement, more than sufficient for the calibre of the trachea-tube inserted, and three-eighths of an inch more than would have been sufficient for its easy introduction. The five upper rings of the trachea were included in the incision.

The occlusion of the passage between the pharynx and œsophagus was found to be due not only to a contraction of this latter tube, but also to thin valve-like folds of mucous membrane, stretched across the lower part of the pharynx—delicate fræna, or duplicatures, such as are seen in symblepharon, for example—these not only tending to diminish the posterior laryngeal space, but really almost forming a cul-de-sac. The catheter already used in this exploration was found to quite fill up the only space left between the overlapping edges of these folds. Thus, while a very little liquid or semi-solid food could insinuate itself into the œsophagus, each attempt at swallowing was followed by partial regurgitation and passage into the larynx of some of the returning material.

Was any operation justifiable in this case? Now that the extent and nature of the obstructing growth in the larynx are definitely known, and the further fact that the dysphagia was due to organic stricture of the œsophagus, probably also malignant, it is quite manifest that the operation could fulfil but a single, and, perhaps, not well-founded indication, substituting a death by exhaustion from inanition for a death by asphyxia. But the question must be considered in the light of the clinical observations, and the issue turns upon a consideration of the advanced age of the patient, her physical condition and probable malignant character of the growth, studied in connection with the dysphagia and the abdominal tumour. The coexistence of a tumour in the larynx, stricture of the œsophagus, and an abdominal tumour, might have justified the opinion that all were alike malignant; but for this, perhaps, remarkable coincidence of three distinct morbid phenomena, there were no other clinical observations, either objective or subjective, which would have determined the fact, and even conceding the malignancy of the laryngeal growth, operative procedure with the view to its removal would not necessarily

have been contraindicated. The expediency should have been determined by the other concomitant circumstances, for epitheliomata have been successfully removed from the larynx; and I believe as a rule, preliminary to any operative procedure to remove the laryngeal growth, tracheotomy or laryngotomy has been performed. In this case the organic stricture of the œsophagus, which was not positively recognized during the life of the patient, presented the chief obstacle to success. No attempt was made previous to the operation to eliminate this doubt, because of the danger of interfering with the embarrassed respiration by the introduction of a bougie into the œsophagus, and surely this danger was not exaggerated, for the morbid specimen very conclusively demonstrates the fact that but very little pressure upon the larynx would have been sufficient to close the very small aperture through which the patient respired. Admitting, for the sake of the argument, that the organic nature of the œsophageal stricture was a logical deduction, and a fair clinical inference from a comprehensive appreciation and analysis of all the phenomena, would not tracheotomy have been justified with the object of removing the threatening complication, so that the impending danger could have been deferred, and sufficient time secured to make a satisfactory exploration? It is quite satisfactory to those present to feel assured that the patient's life was prolonged, though but for one day, by the operation.

Fig. 2.



The only remaining contraindication relates to the advanced age of the patient, and is valid only so far as the presence of calcareous degene-

ration would have enhanced the difficulty and danger of the incision through the cartilages. Happily there is no evidence of any such change, and the case becomes peculiarly instructive, inasmuch as it furnishes an exception to the accepted rule that ossification of the cartilages of the larynx necessarily pertains to advanced age, and is a further confirmation of the view maintained by Dr. Hunt in his paper on "Fractures of the Larynx and Rupture of the Trachea."¹

Gilewski² insists, that, besides the technical objections to operations upon the larynx of old persons, there is "fear of the ready occurrence of perichondritis and even suppuration," but I apprehend this danger is too remote to be valued as a contraindication, when suffocation is impending.

Fig. 2 represents a microscopic section of the laryngeal growth. (From a drawing by Dr. McM.)

ART. XI.—*Observations on some Syphilitic Lesions of the Eye, with Cases.* By CHARLES S. BULL, A. M., M. D., Ophthalmic Surgeon to Charity Hospital, Assistant Surgeon to the N. Y. Eye Infirmary, Microscopist to the Manhattan Eye and Ear Hospital.

WHEN one of the tissues or coats of the eye becomes inflamed, it is not uncommon for the inflammation to extend to some of the other coats, and this is usually the case when there is a direct vascular connection between the parts, as between the optic nerve, retina, and choroid; or, where the connection is very intimate, owing to similarity of structure, as between the iris and ciliary body, or between the latter and the choroid. In the case of a constitutional affection like syphilis, the poison sometimes attacks several parts simultaneously. For this reason it is always well, in cases of syphilitic iritis, to examine the fundus with the ophthalmoscope, for we not uncommonly meet with cases in which the diminution of vision cannot be accounted for by the iritis alone, and an examination reveals the existence of a retinitis, or a choroiditis, or both. In some cases all the tissues of the eye, with perhaps the exception of the lens, are involved in the inflammatory process, and in these instances it is often impossible to make an ophthalmoscopic examination. Hutchinson thinks that the coexistence of iritis with inflammation of the deeper textures of the eyeball is exceptional, and says that in a majority of cases of choroiditis under his observation, no iritis was present. This has not been my experience; on the contrary, so common has been the complication of choroiditis or retinitis with iritis in my public and private practice, that I

¹ Amer. Journ. Med. Sci., April, 1866, page 378.

² Ibid., vol. li. p. 543.

invariably make an ophthalmoscopic examination. The coexistence of some cutaneous lesion with inflammation of the iris or choroid is an interesting feature, to be duly examined and taken into account in discussing the subject. Of course, as inflammation of the iris is usually an early manifestation of constitutional syphilis, occurring, as it generally does, within the first three months after the initial lesion, the lesion of the skin is almost always of the superficial type, generally a roseola. But we do meet with cases in which the cutaneous affection assumes a much severer form, even at this early date, and commits great ravages; and this is seen oftener in the negro than among the whites, as might be expected from the severity of syphilitic lesions of the eye in the coloured race. That form of cutaneous lesion which occurs at the same time with syphilitic choroiditis, is usually of the papular variety, though I have occasionally seen a pustular affection of the skin in those rather rare cases of suppurative choroiditis. In these cases the iris has always been the seat of gummata, which have generally become disorganized, and turned into real abscesses, and the choroidal inflammation has gone on to destruction of the globe. Among the twenty-seven cases of which I have given a short account in this paper, there were nineteen males and eight females, or more than twice as many men as women.

CASE I. *Iritis*.—John M., æt. 30, single, clerk, applied to me in February, 1871, with an inflammation of the right eye. He had contracted the primary lesion six years before, and about two months later an eruption appeared upon his face, breast, arms, and legs, which lasted some four months. This was followed by sore-throat, enlarged cervical and post-auricular glands, and alopecia. He recovered from these symptoms, and for nearly three years had been perfectly healthy. About eighteen months ago, or nearly four years and a half after the primary lesion, he was attacked by an inflammation of the right eye, which was probably an iritis. This was the first time his eyes had ever been affected. He recovered from this attack completely, and said that his vision was as acute as ever. Two months previous to my seeing him, or sixteen months subsequent to the first attack of iritis, the same eye became again inflamed, but this attack was much more serious, and has lasted up to date. Intense pain, sometimes in the eye and orbit, sometimes following the course of the supra-orbital nerve, and extending as far back as the occiput. The eye presented the usual appearances of a bad attack of iritis, and the pupil was irregularly dilated upward and immovable. The anterior chamber was, however, transparent, and, with the ophthalmoscope, the vitreous humour was found to be slightly hazy, and a number of yellowish-white dots of exudation, of irregular shape and varying in size, were seen in the choroid. The retina did not seem to be much involved, though the veins were very much engorged and tortuous. Vision in this eye was reduced to counting fingers at four feet, but was normal in the other eye. In this case, the first attack of *iritis* came on $4\frac{1}{2}$ years after the occurrence of the primary lesion, which is the first point of interest in the case. Another point is the fact that he recovered from this, and sixteen months later had a recurrence of the inflammation, which went on to involve the choroid and vitreous humour. These relapses are very common, and diffi-

cult to manage. The patient was treated by mercurial inunction, followed by iodide of potassium pushed to toleration. The latter drug had to be discontinued from time to time, and, in the intervals, iron and quinia were administered. The patient was under treatment about four months, and, when discharged, all signs of inflammation had subsided, but the pupil remained immovable, and the exudations were about the same size.

Vision had risen to $\frac{8}{\text{CC}}$.

CASE II. *Cyclitis*.—Lucy M., æt. 30, married; contracted syphilis from her husband about two years before I saw her in April, 1871. She had had an eruption upon her face, chest, and abdomen, and some sore-throat, and vague osteoscopic pains. In May, 1870, or eleven months after the primary lesion, she was attacked by an inflammation of the right eye, which was attended by a good deal of pain, redness, and photophobia. Vision diminished very rapidly at first, but has remained about the same for some months past. The ciliary injection is marked, but seems to be most intense between the insertions of the tendons of the superior and external recti muscles, though there is no external swelling. Cyclitis was diagnosticated more from the localized injection than from anything else, the pain having ceased for the last six weeks. Intraocular tension slightly increased; pupil moderately dilated, and insensible to light, but atropia dilated it well, showing that no posterior synechiæ were present. Vitreous humour so cloudy that no satisfactory view could be gained of the fundus. Vision reduced to counting fingers at eight feet—that of the fellow eye being normal. The interesting point in this case was the occurrence of a cyclitis without any plastic iritis. The choroid was probably involved, as the vitreous was so cloudy. This case also shows how severe an inflammation an eye may be exposed to for so long a period as eleven months, and yet retain a certain amount of vision. An iridectomy was done upwards, and atropia instilled every four hours, and at the end of six weeks all signs of inflammation had subsided, though the vitreous remained somewhat cloudy. Vision improved to $\frac{20}{\text{CC}}$.

CASE III. *Choroiditis Exudativa*.—Mrs. S., æt. 33, was seen for the first time in February, 1871. She contracted syphilis in July of the previous year, and has since had an extensive eruption and sore-throat. About two weeks ago she noticed that the vision of the left eye began to be very dim, and rapidly grew worse. There has been no pain and redness at any time, and there is nothing abnormal to be seen about the eye, except that the pupil is dilated. Vision reduced to $\frac{5}{\text{CC}}$. Vitreous slightly

hazy, and extensive exudation in choroid, evidently of some standing, had involved the optic nerve. The latter was swollen and reddened; arteries very small; veins very much enlarged. The papilla so œdematous as to render its outline indistinguishable. Exudation in the choroid of a dirty yellow colour, and scattered in numerous patches, most of them being near the posterior pole of the eyeball. Retina near the optic nerve-entrance also œdematous, but further out towards the equator it did not seem to be much involved. Patient states decidedly that she had had no trouble of any kind in her eye previous to this attack, so that this seems to be a case where the choroidal inflammation came on rather early, within eight months of the primary lesion. This patient recovered somewhat under the

mercurial treatment, so that the vision rose to $\frac{10}{CC}$, but the nerve showed signs at the last of atrophic degeneration.

CASE IV. *Irido-cyclitis*.—Thomas S., æt. 41, married; contracted a chancre about $2\frac{1}{2}$ years before I saw him, in April, 1872. This was followed by most of the secondary symptoms, among them an iritis, which occurred four months after the primary lesion. This he recovered from, and the eye remained sound and vision good till seven weeks ago, or about two years and four months after the primary lesion. The eye again became red and painful, pain being most severe. At the date of examination ciliary congestion is most marked, and there is prominence over the region of the ciliary body above and to the outside of the cornea. Aqueous humour so hazy that no view of the fundus can be obtained, but the iris is bulged forward at the periphery, and the pupil contracted and immovable even to atropia. This is another case of relapsing iritis, the relapse being much more serious than the first inflammation. The mercurial treatment was commenced immediately, followed by iodide of potassium, and the inflammatory process subsided slowly, so that in about three weeks, an iridectomy upwards and inwards gave good results $V = \frac{20}{70}$.

CASE V. *Neuro-retinitis in both Eyes*.—W. C., æt. 34, married, salesman; contracted the primary lesion more than seven years ago, and has suffered severely from the constitutional symptoms of syphilis. Had an attack of iritis in the right eye about three months after the appearance of the initial lesion, from which he recovered entirely, so that his vision was perfectly restored and the pupil freely movable; but he had a recurrence of the inflammation in this eye two months later, which was of a more plastic nature than the first attack, for it left behind one or two posterior synechiæ, which were only partially broken up by atropia, the pupil being bound down to the capsule of the lens below. More than two years after the appearance of the chancre, the left eye became inflamed in the same manner as the right eye, but the disease ran a much slower course, so that about five months elapsed before all signs of inflammation had subsided. At the present date the pupil of this eye is freely movable to light, but there are several spots of pigment upon the anterior capsule. Since the last attack, now nearly four years, the eyes have been perfectly sound and he has used them constantly for reading, until about four weeks ago. He noticed one evening while reading that his sight was somewhat dim, and that the letters were blurred and ran together. Vision rapidly grew worse, but was unaccompanied by any pain. When I first saw him in October, 1871, the pupils were then moderately dilated and very sluggish, but he did not complain of any photophobia or photopsia. Right eye $V = \frac{20}{70}$, left eye $V = \frac{20}{50}$, no improvement by any glasses. With the ophthalmoscope, there was found myopia $\frac{1}{8}$; the cornea, aqueous and vitreous humour were transparent, but there were some small spots of pigment on the capsule. Both eyes presented well-marked examples of choked disk, "stauungspapille" of Von Graefe. The optic disks and retinae were very oedematous and swollen, their outlines invisible, the retinal veins very engorged and tortuous, and the arteries about normal in size, and in places concealed by the exudation. There were one or two small hemorrhages on the disk in the right eye, but none in the left. Field

of vision limited to the periphery in both eyes, markedly so in the right. The patient has used tobacco to excess for many years, but has not been addicted to intemperance. For more than a year back has been troubled with severe occipital headache, which for weeks was constant, but lately the pain has been much less severe. This is probably of intra-cranial origin, either from pressure by a tumour in the course or near the origin of both optic nerves, occurring *seven* years after the initial lesion, a late manifestation, or from basilar meningitis. Vision grew steadily worse in spite of mercurials and the iodide of potassium, and the patient disappeared after about two months' treatment. Of course the result was probably complete amaurosis from atrophy of the optic nerves, provided the cerebral lesion did not first end fatally.

CASE VI. *Kerato-irido-choroiditis of Right Eye*.—M. S., æt. 33, married, agent; was seen by me in August, 1871, when he had a severe form of kerato-iritis, with intense ciliary congestion, great pain, photophobia, and lachrymation. The tension of the eyeball was somewhat increased, and the pupil narrowed by posterior synechiæ. Four years ago while in Florida, he had an attack of inflammation in both eyes, which from his description must have been a blenorrhœa. He recovered from this, but both corneæ remained somewhat cloudy from old ulceration. Two years ago he contracted a chancre, which was followed by secondary symptoms, but the eyes had remained well until about ten days before I saw him. Whether the previous inflammation in the eyes had rendered them more than usually susceptible to the syphilitic poison, can of course only be conjectured; but I am inclined to think it was so, for the inflammation ran a very rapid course to an unfavourable issue, and yet the man was in very robust health, and did not drink at all. Atropia was instilled every hour, mercurial inunction persevered in till symptoms of pytalism showed themselves, and then the iodide of potassium was administered in large doses; but in spite of all treatment, the vitreous became opaque so that no view of the fundus could be obtained. In hopes of staying the process, an iridectomy was done upwards, but the artificial pupil was soon closed by a membranous exudation, the tension rapidly diminished, and phthisis bulbi was the final result. It is not often, fortunately, that we see such a rapidly fatal result from a syphilitic lesion in these days, when the symptoms appear to be losing in intensity from year to year, and it seems worthy of more than a passing notice in this case, where none of the previous constitutional symptoms had been of any severity, and the patient was of fine physique and robust health. I cannot but think that the suppurative inflammation of the conjunctiva, which had involved the cornea, had left it in a condition but little fit to resist the attacks of any constitutional taint like syphilis.

CASE VII. *Retinitis Pigmentosa of both Eyes*.—Mary S., æt. 27, married, was first seen in February, 1872. She had always been short-sighted, but could read and sew perfectly well, and with glasses could see well at a distance; but within the past three months her vision had commenced to fail, and was much better when the sun shone brightly. On examination in the *right* eye, $V = \frac{5}{CC}$, but with concave 6 spherical

$V = \frac{20}{XL}$. In the *left* eye $V = \frac{20}{C}$, and with concave 16 $V = \frac{20}{XL}$. After atropia, I found in the *right* eye a myopia of $\frac{1}{4}$, and in the *left* eye a myopia of $\frac{1}{10}$, the media perfectly clear in both eyes, but the optic papillæ

decidedly paler than normal, and the arteries somewhat diminished in calibre. In the region of the equator there were scattered the peculiar irregularly stellate pigment masses which we see in retinitis pigmentosa, and some few in the retina nearer the optic nerves. The field of vision was limited concentrically about equally in the two eyes. The patient had miscarried twice, the last time about a year ago. She had one child about five years old, which was sickly but had no decided marks of constitutional syphilis. The patient herself had never been well, and when a child she had suffered from enlarged glands and a sore mouth. Of course it is well known that retinitis pigmentosa is frequently met with in congenital syphilis, and there is no doubt that the patient inherited syphilis. But this form of retinitis almost always comes on in childhood, and very often is itself congenital, and it is exceedingly rare for the retinal disease to be postponed so long as 26 years. It is of course possible that even in this case the process had commenced years before, but it is not probable, for, although its progress is slow, yet it soon affects the vision, and involves the optic nerve. In fact the process ends in atrophy of the optic nerve and whole retina. This patient had some well marked symptoms of congenital syphilis; the teeth being very irregular, and the notches in the incisors such as we meet with in Hutchinson's teeth. I could not elicit any information in regard to the other members of her family, except that two of her sisters had died when children from some wasting disease.

CASE VIII. *Neuro-retinitis*.—J. L., æt. 43, married, labourer, was first seen in June, 1872. In January of the preceding year he contracted the initial lesion of syphilis, which was followed by an eruption upon the face and chest, and ulceration of the fauces, the scars of which are still visible. But there has been no affection of the eye of any kind till the present trouble, which commenced one week before I saw him. Here the disease affects both eyes, and to about the same extent. In the *right* eye

$V = \frac{20}{C}$, in the *left* eye $V = \frac{15}{C}$, with large central scotomata, colour-blind-

ness for all except blue, and eccentric vision in both eyes. The ophthalmoscope showed a typical picture of choked disk in both eyes, the papillæ enormously swollen and projecting into the vitreous, engorged and tortuous veins, and œdema of the whole retina, but no hemorrhages. Here was a rather unusual case; an inflammation of the nervous tunic of the eye, depending no doubt upon syphilitic taint, without any preceding trouble in the eye, not even an iritis. There were no head symptoms which might lead to a suspicion of cerebral lesion, and yet I could not satisfactorily explain the appearances in any other way than as caused by pressure. The case only remained under observation for about a week, and then disappeared, but it probably ended in optic nerve atrophy.

CASE IX. *Neuro-choroiditis*.—Mary M., æt. 45, married, mother of eight children, was first seen in September, 1872. Vision commenced to fail about three years ago, but the progress of the disease had been slow. It commenced in the *left* eye, and it is only within the last few months that vision in the *right* has also commenced to fail. She volunteered the statement that her husband had given her syphilis, and that she had suffered from alopecia, sore-throat, and osteoscopic pains, and she has at present a series of nodes along the spines of the tibiæ, some of them of considerable size. The *left* eye shows signs of an old iritis, with spots of pigment on the capsule, and vision was $\frac{20}{C}$, with the *right* eye $\frac{20}{XL}$. Anoph-

thalmoscopic examination showed in the *left* eye quite extensive spots of exudation into the choroid over the whole fundus, some being of old date and surrounded by pigment, while others were quite recent. The nerve was white; the branches of the central retinal artery considerably reduced in calibre; retina somewhat hazy immediately round the papilla, but not much altered elsewhere. In the *right* eye there was no exudation into the choroid, but the whole fundus was intensely congested and had a sodden, œdematous appearance, as if soaked in water. The process was stopped in the right eye by prompt mercurial treatment, but the vision was not improved in either eye, and in fact gradually sunk in the left eye to $\frac{10}{cc}$,

where it seemed to remain for some months. How long a time elapsed between the occurrence of the chancre and the appearance of the iritis, we do not know, but the woman thought it was about fourteen months. We also do not know how long a time the iritis antedated the choroidal disease, or whether they both occurred simultaneously, but I am inclined to favour the latter view, as the vision steadily grew worse from the commencement of the trouble.

CASE X. *Choroiditis*.—J. T., æt. 29, single, book-folder, was first seen in June, 1872. She has been suffering from the constitutional symptoms of syphilis for seven years, but does not know when she contracted the primary lesion. The fauces and posterior wall of the pharynx show very large cicatrices, so that the ulceration must have been very extensive. The most obstinate symptom has been a cutaneous eruption, which came on nearly seven years ago, and lasted about four years. About five years ago her eyes began to trouble her, the disease causing some pain and photophobia, and vision began to fail, but grew slowly worse. There has never at any time been any sign of a violent inflammation. At the date of admission both eyes were normal in appearance, the irides of natural colour, and the pupils regular and reacting under the stimulus of light. On examination $V = \frac{20}{cc}$, but with concave 36 spherical she read $\frac{20}{L}$ with either eye.

There was an insufficiency of the internal recti of 1° at 18 feet, and of 3° for a distance of 18 inches. No limitation of the field of vision in either eye, and no colour scotoma. The ophthalmoscope showed a myopia of $\frac{1}{36}$; the media perfectly clear; the optic nerves very much reddened; the temporal edge swollen out like a wall; veins engorged, tortuous, and very dark; arteries very much reduced in calibre. Scattered all over the choroid, but more generally in the equatorial region, were masses of yellowish-white exudation, of very irregular shape and size, some of which appeared to push the retina before them. Most of these were surrounded by lines of pigment, showing the process to be of long standing, but in the region of the macula lutea were some bright, glistening spots resembling the changes in the retina in albuminuric retinitis, but lying deeper. There was no agglomeration of these masses of exudation near the posterior pole of the eye, which Graefe thought to be characteristic of syphilitic choroiditis, but the case was a type of choroiditis disseminata. Under mercurial treatment, followed by iodide of potassium and long continued administration of tonics, this patient grew somewhat better and vision increased to $\frac{20}{XL}$, congestion of the optic papillæ subsided, and they assumed a healthy appearance, except that the arteries still remained narrowed. The choroidal

process was a very slow one, and was the first manifestation of any specific trouble in the eye. There were no signs of any previous iritis or hyalitis, and the choroiditis must here be regarded as one of the late symptoms of the syphilitic taint.

CASE XI. *Choroiditis*.—J. H., æt. 27, single, night watchman, applied for treatment in June 1872. For the past two months there has been a gradually increasing dimness of vision of the *right* eye, with some pain and photophobia; has never had any affection of the eye before, and only complains of the right eye. He contracted syphilis three years ago, which was accompanied by enlargement of the inguinal glands on both sides, and the ulcer, which was on the prepuce, remained open for nearly three months. Before the chancre healed, an eruption appeared upon his face, chest, and arms, which seem to have been of a scaly nature. He recovered from this entirely, so that there was no trace left upon the skin, and remained well until about a year later, when another eruption appeared on his arms and legs, which was much more serious, as it resisted treatment for a long time, recurred again and again, and has only lately subsided, leaving behind it a permanent discoloration of the skin. About the same time he suffered from alopecia, and a peculiar huskiness of the voice. There was nothing abnormal noticeable in the eyes, except an extreme myosis, and great sluggishness of the pupils.

Right eye $V = \frac{20}{c}$, left eye $V = \frac{20}{xxx}$; no limitation of the field of vision.

The ophthalmoscope revealed in the right eye a recent exudative choroiditis, the spots being small in size and few in number, and massed in the region of the macula, and optic disk. The choroidal stroma was plainly visible, owing to the small amount of pigment in its meshes, and its vessels were enlarged and tortuous. The nerve did not seem to be much affected; retina tolerably transparent, and vitreous perfectly so. Refraction slightly hypermetropic. Pupil dilated fully though slowly by atropia, and there were no signs of any preceding iritis. The *left* eye showed nothing abnormal beyond a slight congestion of the optic papilla. Under mercurial treatment the patient grew rapidly much better, so that vision went up to $\frac{20}{L}$ in the *right* eye, remaining as it was in the *left* eye. There

seems no doubt that this was a case of incipient choroiditis, before the functions of the choroid had been seriously impaired, and while the disease had as yet apparently only involved one eye, and hence the good results of treatment. Here again must the choroiditis be regarded as a late symptom of syphilis, three years having elapsed between the occurrence of the initial lesion and the commencement of the trouble in the eye.

CASE XII. *Choroiditis*.—T. O., æt. 62, married, carpenter, was first seen by me in November 1872. He complained of a dull, heavy feeling in the head, accompanied by dizziness, and of a dimness of vision, which dated back two months, and which has steadily grown worse. He contracted a chancre *eight* years ago, and two months later an eruption appeared, which lasted several months. Since then he has suffered from most of the symptoms of general syphilis, and at present complains of intense pain in the bones of the head, anus, and legs. An examination showed nodes along the tibiæ over the crest of the ilium, and along the posterior aspect of the ulna, and the frontal bone was very tender to the touch, as if the seat of periostitis. Three years ago he had an attack of iritis in right eye, and afterwards in the left, for which he had no treat-

ment, and which left their traces, both pupils being nearly immovable from posterior synechiæ. He has had several recurrences of inflammation in both eyes, but insists that his sight was good enough to enable him to work at his trade until two months ago. In the *right* eye $V = \frac{8}{CC}$, in the *left* eye

$V = \frac{20}{CC}$, with no improvement by any glass. After atropia had been

instilled a number of times, the pupils dilated somewhat though irregularly. An ophthalmoscopic examination showed extensive exudative choroiditis with progressive atrophy of choroid and optic nerves, which had evidently been going on for some months, and perhaps a year. Of course much improvement by treatment could not be expected, and in fact after a two months' course of mercury and iodide of potassium, vision was still the same as at first, though the patient's health was somewhat better. In this case, the deep trouble of the eye, though preceded by several attacks of iritis and perhaps of cyclitis, yet was postponed for a very long time after the occurrence of the primary lesion, and the interval was the longest but one that I have met with.

CASE XIII. *Congenital Syphilis with Choroiditis Disseminata*.—Ida E., æt. 9, was brought to me last October by the mother, with the story that on the previous day she had noticed that the child was completely blind in the right eye, and that she had never previously noticed anything the matter with her eyes. The bridge of the child's nose had fallen in from caries of the bones, with chronic ozaena, and a very profuse and offensive discharge, which first appeared when she was six weeks old, and she has been subject to frequent attacks of keratitis. She has at present a slight degree of interstitial keratitis. The teeth are slightly notched though not markedly so, and the hard palate and fauces are the seat of extensive ulceration. In the *right* eye there is merely perception of light, and the *left* eye has $V = \frac{20}{C}$. The ophthalmoscope showed a typical example of cho-

roiditis disseminata, with dense white atrophic appearance of the *right* optic nerve, and a less degree of atrophy of the left optic nerve. The fundus of each eye is covered with immense masses of pigment, reaching from the optic papilla to the ora serrata. The irides were discoloured, but the lens clear in both eyes. The father of the child is now suffering from tertiary symptoms, and the mother has once aborted. A sister of the child died of phthisis pulmonalis, and there are signs of syphilis in another child of the same family. Thus we certainly have a well-marked case of hereditary transmission, and the eyes of the patient are almost a pathological museum themselves. Treatment did this child very little good, except in improving her general health. The *right* eye remained amaurotic, and there was scarcely any improvement in the *left*, though the corneæ both cleared up remarkably.

CASE XIV. *Irido-Choroiditis*.—C. J. C., æt. 30, married, clerk, was sent to me by the kindness of Dr. Eno. The patient contracted the primary lesion in September, 1873, which was followed by enlargement of the inguinal glands. Six weeks later an eruption appeared on the face, and he suffered from superficial osteoscopic pains, alopecia, and aphonia. In March, 1874, six months subsequent to the initial lesion, he was attacked by a plastic iritis in the right eye, with posterior synechiæ, numerous condylomata, and turbidity of the *vitreous* humour. Two weeks

later the left eye became affected in the same way, with condylomata and a punctate exudation upon or in the membrane of Descemet. In this case the condylomata sprang from the pupillary margin of the iris, and a trifle posteriorly, as is usual. The exudation upon the posterior surface of the cornea increased, and looked like an interstitial keratitis. An ophthalmoscopic examination showed a slightly turbid vitreous and a marked congested appearance of the nerve and choroid, but as yet no exudation. This case steadily improved under treatment, and the deeper tissues of the eye have apparently escaped as yet.

CASE XV. *Irido-Cyclitis*.—M. H., æt. 46, single, baker, also kindly sent me by Dr. Eno in April, 1874, contracted the primary lesion four months before, and had an eruption on the back, arms, and neck, some traces of which remain at date. One month ago he was attacked by pain, redness, and dimness of vision in the left eye, and ten days ago with the same in the right eye. At present the iritis is very marked in both eyes. The irides are discoloured, the pupils very slightly and irregularly dilated, though atropia has been used for several days; the posterior synechiæ are very extensive, and the ciliary injection is so marked and localized over the insertion of the superior rectus muscles and outwards from this, as to lead to a suspicion of cyclitis. The pain is very severe, the irides drawn backward, the anterior chamber very deep, and the aqueous humour turbid; there are no condylomata. This patient also improves under treatment, and at no time has there been any inflammation of the retina or choroid, thus agreeing with most of Hutchinson's reported cases.

CASE XVI. *Double Iritis*.—H. D., æt. 21, single, cartman, first seen early in April, 1874; had contracted a chancre six months before, which was followed by enlarged inguinal glands on both sides, superficial and transient osteoscopic pains, and four months later ulceration of the fauces and posterior wall of the pharynx. To this succeeded a somewhat profuse discharge from the nostrils, and alopecia. One month later, or five months subsequent to the primary lesion, there appeared a papular eruption on the face, neck, and arms, and enlarged cervical and post-auricular glands. The eruption soon took on a pustular character, and six months after the initial lesion both eyes were attacked simultaneously by iritis. When I saw him, on the sixth day of the attack, both irides were discoloured, the ciliary injection was very marked, and the pupils were bound down by posterior synechiæ. There were no condylomata, and the patient had experienced scarcely any pain. Atropia was instilled every two hours, and a drachm of mercurial ointment rubbed in the shoulders and groins alternately, night and morning; but it was not until the third day that the pupils showed any sign of dilating, and then very irregularly. The irides were bulged out at the periphery or "bombé." On the seventh day the pupil of the left eye was widely and regularly dilated, and the right pupil nearly as widely, and the eruption was rapidly subsiding. As the patient showed signs of pyalism, the mercury was discontinued, and iodide of potassium given in large doses. The patient made a good and rapid recovery, though with spots of pigment remaining on the capsule.

CASE XVII. *Scleritis of Left Eye*.—C. D., æt. 36, married, seamstress, applied for aid in April of the present year, having contracted syphilis from her husband more than ten years ago; has suffered severely with sore throat and nodes on her arms and legs, but her eyes had never been affected until about seven years ago. At that time she was treated for an inflammation of the left eye at the N. Y. Eye Infirmary, attended

with great pain, with an almost entire loss of vision, which has never been recovered. About six weeks before I saw her, the *left* eye again became inflamed and very painful, but the *right* remains as sound as ever. There was a localized redness and slight swelling in the ciliary region between the superior and external rectus muscles, which extended back about four lines from the line of insertion, and was painful on pressure. On examining with the ophthalmoscope, the vitreous was seen to be occupied by an organized membrane, partly floating free, but attached broadly to the fundus in the upper and inner quadrants. In the external quadrant there was seen a dark-brown mass, which was stationary, and which was possibly connected with the external swelling. The nerve entrance could be seen in part, though not very distinctly. Pupil dilatable; cornea and lens clear. Fundus of other eye normal, and showed a hypermetropia of $\frac{1}{30}$. No improvement by treatment.

CASE XVIII. *Iritis and Retinitis*.—Samuel V., æt. 31, married, contracted the primary lesion five months before I saw him in April, 1874. This was followed by swelling of the inguinal glands, and two weeks later an eruption appeared upon the abdomen, legs, back, face, and hands, which was probably a roseola. About two months later he began to suffer from periosteal pains, and on the first of April an iritis commenced in the right eye, accompanied by severe pain and marked failure of vision. When I saw him there was a well-marked iritis, with great pain and photophobia, and below and on the temporal side a small condyloma. This occupied a very unusual site at the periphery of the iris, and inclined forward against the cornea. There was a general retinitis, the whole retina being cedematous, with engorgement of the vessels and an exudation upon the papilla. Vision reduced to $\frac{20}{cc}$, but no limitation of the field. Under the usual mercurial treatment the patient made a good recovery, and he was discharged in five weeks with a vision of $\frac{20}{xxx}$.

CASE XIX. *Iritis*.—Patrick M., æt. 23, single, labourer, had primary lesion in January, 1873, followed by enlargement of the inguinal glands, roseola, ulceration of the fauces, and periosteal rheumatism. Seventeen months later the right eye became inflamed, accompanied by pain, photophobia, and some diminution of vision. In a few days the eye grew better, but he suffered a relapse, and presented himself at the infirmary. There were no signs of any posterior synechiæ or deposit on the capsule, and no discoloration of the iris. He had a papular eruption on the arms, chest, and legs. Vision only $\frac{20}{70}$, but there was such extreme photophobia that no view of the fundus was obtained. The left eye, however, was found to be highly myopic, with refraction of $-\frac{1}{2}$, a very large posterior staphyloma and atrophy of the choroidal stroma. The treatment by inunction was commenced, and in about one month all signs of inflammation had subsided. With a concave 6 glass, vision was increased to $\frac{20}{30}$ in both eyes, and the patient was discharged cured.

CASE XX. *Iritis*.—James B., æt. 36, married, contracted the primary lesion in August, 1873, which was followed by the usual train of constitutional symptoms. The right eye was attacked by iritis in October of the same year, two months after the inception of the disease, for which he was treated at the infirmary, and recovered entirely in four weeks. In January, 1874, he had a relapse, which lasted six weeks, and left the vision very dim from deposits on the capsule and posterior synechiæ. In May of the

same year he had a second relapse, which had already lasted a month when I saw him. The left eye has never been affected, and vision remains normal. There have been no condylomata, and the whole process has been of a very sluggish character, so that, although the usual mercurial treatment was resorted to for a number of weeks, the eye remained in about the same state. There was no retinal or choroidal complication, though the media were somewhat cloudy. He was finally discharged after two months' treatment with a vision of $\frac{2}{70}$.

CASE XXI. *Irido-Choroiditis; Neuritis Descendens; Cerebral Tumour; Death.*—William L., æt. 30, married, Scotchman, was an exceedingly interesting case which terminated fatally, and the autopsy confirmed the diagnosis in a remarkable degree. The patient contracted a chancre in April, 1872, which was followed by the usual constitutional symptoms, for which he was treated in Charity Hospital. Six weeks after the occurrence of the initial lesion he was attacked with double iritis, which yielded to mercurial treatment. One year later he had another attack of iritis in both eyes, and an eruption of acne on the face and chest, and mucous patches in the mouth. In October, 1873, he entered the infirmary with a third attack of double iritis, and after six weeks' treatment a double iridectomy was done upwards, which gave an excellent result, vision being $\frac{2}{90}$. He remained in the institution as a nurse, and two months later the vision commenced to fail in both eyes. The ophthalmoscope showed a double choroiditis, with spots of exudation all over the fundus, haziness of the vitreous, and numerous floating bodies, the left eye being much the worse. The usual treatment was resorted to, and the iodide of potassium was given in constantly increasing doses until he took four drachms daily for a number of weeks. He then began to complain of constant headache, the potash was discontinued and mercurial inunction again resorted to, but with no avail, and the headaches grew worse. On June 15th he complained of insomnia, and began to act very strangely, wandering in his mind, talking to himself, and inattentive to his surroundings, though he could be roused. Pulse was about 60 and soft, temperature $98\frac{1}{2}^{\circ}$ to 99° . On the morning of June 17th he was found completely hemiplegic on right side, with facial paralysis of same side, loss of speech, and semi-comatose. Sensation and motion completely lost, pulse 60 and bounding, temperature $98\frac{1}{2}^{\circ}$. On June 19th sensation began to return in the leg and arm; he was very restless and noisy, though unable to speak. Pulse and temperature varied very little till June 23d, when the pulse went up to 78, and his sphincters became relaxed. Sensation was completely restored, and at times he was entirely conscious. There were some coarse mucous râles over the right lung, and he had a slight cough. This condition remained about the same till July 10th, when a change for the worse showed itself, and his pulse and temperature went up to 100. On July 12th pulse 130, temperature $102\frac{3}{4}^{\circ}$, and he became very somnolent. He died on the morning of July 15th, comatose. *Autopsy* twelve hours after death. Organs of the thorax and abdomen healthy; the membranes of the brain engorged as well as the brain itself. The subarachnoid cavity contained considerable fluid, and the ventricles were distended with serum. There were no signs of any hemorrhage, or of any endo-cranial bony growth, or of any meningitis, but there was a thrombosis of the right middle cerebral artery, and, just in front of the optic thalami, a little to the right of the median line but reaching across this line, was a stellate cicatrix on the basilar surface, the remains in all probability of a syphilitic gumma, which had undergone disintegration and absorption.

CASE XXII. *Choroiditis*.—Julius L., æt. 45, married; contracted primary lesion about thirteen years ago, which was followed by a very obstinate train of constitutional symptoms. One year later the right eye became inflamed and very painful, and the iritis was of such an obstinate nature that six months passed before the inflammation entirely subsided. Has had several relapses in the right eye, and vision has slowly failed. Six months ago the vision of the left eye began to fail, though the eye has never been inflamed. Three years ago he had an attack of apoplexy, and was unconscious for a week, and was paralyzed from the waist downwards, while the arms were not affected. In the right eye $V = \frac{20}{70}$, in the

left eye $V = \frac{20}{40}$. Pupils are moderately dilated, but extremely sluggish;

media clear, but each eye is the seat of a pronounced choroiditis disseminata, with a most abundant pigmentary deposit, grouped near the optic nerve and macula. The spots of pigment are so nearly of a size, and so regularly arranged, as to resemble the pictures of the layer of hexagonal cells on the posterior surface of the retina. In the retina itself are numerous irregular, stellate, and shapeless masses of pigment, some overlying the vessels. Optic papillæ of a dirty-white colour; arteries much reduced in calibre. The antisymphilitic treatment was persevered in here for nearly two months, but there was no improvement of vision, and the atrophic process in the nerves went on in spite of the administration of strychnia.

CASE XXIII. *Iritis*.—Benjamin E., æt. 23, single, coloured; contracted a chancre in the summer of 1872, which was followed by some constitutional symptoms, none of them very marked until December, 1873, when an eruption appeared on the arms, and spread all over the face and body. There have been no glandular enlargements, but the patient suffers intensely from periosteal rheumatism. In January, 1874, had an attack of iritis in both eyes, of a very virulent type. He was treated for five months, but the left eye was eventually lost, and was enucleated in New Haven. When I saw him, the right eye was very much inflamed, iris discoloured, pupil irregular, and bound down immovably to the capsule of the lens, and pupillary space occupied by a whitish-yellow mass, probably pus. There were several gummata of small size in the lower part of the iris, the anterior chamber was half full of pus, and the pain very great. After a vigorous mercurial course, followed up by potash, iron, and quinia for three weeks, the inflammation subsided, the synechiæ were broken up, and vision of $\frac{20}{40}$ was reached, and the patient discharged on the 20th of

July. On the 24th of August he again entered the infirmary with a violent relapse, great pain, a large hypopyum, and the tension very much diminished, and he is still under treatment.

CASE XXIV. *Irido-Choroiditis*.—Norah C., æt. 20, single. Does not know when she contracted syphilis, but two years ago the vision of the right eye began to fail, without any pain or signs of inflammation, and the sight has slowly grown worse. About eight months ago the vision of the left eye began to fail in the same way, and she can now (July 6, 1874) only count fingers at two feet with the left eye, and at six inches with the right eye. Has had ulceration of the pharynx and fauces, a cutaneous eruption which still exists, and alopecia. About six weeks ago she aborted with a female child at the seventh month. There are marks of

old iritis in both eyes, and in the right eye the pupil is immovable, and filled by a membrane. In the left eye the pupil can be dilated, and the ophthalmoscope shows an old choroiditis, with a detachment of the retina on the temporal side, and incipient cataract. The tension of both eyes is somewhat diminished. Treatment here was of no avail, the vision steadily grew worse, and patient was discharged.

CASE XXV. *Iritis*.—Frederick W., æt. 26, single. Contracted initial lesion four months before, which was followed by the usual symptoms, and eight days before I saw him the inflammation commenced in the left eye. There are complete posterior synechiæ, but no condylomata. No retinal or choroidal complication; complete recovery in three weeks.

CASE XXVI. *Irido-Choroiditis*.—Daniel M., æt. 30, single. Initial lesion four years ago, followed by the usual manifestations of constitutional infection. Right eye became affected within two months, and the inflammation ran a rapid and destructive course, attended by excruciating pain. When I saw him there was an old irido-choroiditis, with a luxated cataractous lens, with a ciliary neurosis occurring every few weeks, but no active inflammatory symptoms. The globe was atrophied, the iris fluttering, and sympathetic trouble had already commenced in the fellow eye. The patient refused an enucleation, and was discharged.

CASE XXVII. *Retinitis*.—John D., æt. 29, single. Primary lesion contracted ten years ago, followed by constitutional symptoms. Two years ago the right eye began to trouble him for the first time; without any pain or sign of inflammation, vision suddenly grew dim, and continued so for some weeks, when he recovered his sight. About one month ago, the eye having remained well in the interval, vision again began to fail. The left eye has remained well all the time.

R. E. $V = \frac{20}{70}$, L. E. $V = \frac{20}{20}$, Hm. $\frac{1}{3}$. In right eye, retina is œdematous and swollen, veins engorged and tortuous, and vitreous somewhat hazy. No signs of old iritis. The patient was discharged in three weeks. $V = \frac{20}{30}$.

It may be seen from these cases that iritis is not always the first symptom of syphilitic disease of the eye, as in six of them it did not occur at all. We also learn to dread relapses from iritis, as they generally involve the deeper tissues of the eye, and set up a choroiditis, or cyclitis, or both. Though it is rare to see an inflammation of the optic nerve or retina as the first lesion of syphilis in the eye, yet we do meet with such cases. Again, we see that it is not at all uncommon for one eye to remain sound throughout many years, though the more virulently the disease manifests itself in one eye, the greater danger there is to the other eye; and relapses should always excite fear for the unaffected organ. The destructive course run by a syphilitic inflammation of the eye in the coloured race, which I have elsewhere called attention to (*Archives of Scientific and Practical Medicine*, March, 1873), seems to receive confirmation in Case XXIII. In many of the cases the first manifestation of any trouble in the eye was postponed for years after the occurrence of the chancre, but yet no rule can be stated to help us in the matter of prognosis. Of course, the earlier

a proper mercurial course of treatment is begun, and the more faithfully it is carried out, the better are the chances that the eyes will escape. And I think we may safely say, that the unfavourable cases of syphilitic lesions of the eye, those which we see for the first time long after the trouble has commenced, have reached this condition from lack of proper treatment, or from worse neglect. Mercury and iodide of potassium, with iron and quinia, and a proper attention to diet and hygiene, will do wonders when the case is understood.

214 WEST 44TH STREET, N. Y., Sept. 10, 1874.

ART. XII.—On "*Bloodless Surgery.*" By JOHN R. McCLURG, M.D.,
of West Chester, Pennsylvania.

INASMUCH as Professor Esmarch's "Bloodless Method" for surgical cases is now claiming the attention of the world, and as in its connection one of the leading surgeons of Europe recently said that "operative surgery has reached the utmost bounds of perfection," while another declared that "this country—England—and America divide the conspicuous honour inseparable from the discovery of anæsthesia, that Chassaignac's system of drainage, to which justice has scarcely been done, is one of the greatest contributions amongst the many with which Frenchmen have enriched surgical art," and that "now the Professor of Surgery at Keil has introduced a method of procedure calculated to influence most beneficially, in the conjoined interest of science and humanity, a large domain of surgical practice," a few remarks upon this "triumph of surgery" may not be superfluous. The great advantage claimed for Esmarch's method is the saving of blood, that operations can be performed and limbs removed with little more than the mere sight of blood, not one drop of arterial blood being lost. It is not, however, so far as I know, claimed that the divided tissues heal more readily, that the shock to the system is in any degree lessened, that subsequent oozing and secondary hemorrhage are less likely to occur, or sloughing, mortification, or pyæmia to follow an amputated limb. But while it is admitted that by the use of the elastic roller and cord *bloodless operating* can be attained in favourable situations, as upon the extremities, yet all do not admit that even here do we have *bloodless operations*, for after the removal of the elastic bandage or cord, a general and "continued oozing of blood from the divided tissues invariably follows, which necessarily prevents primary union of the wound." If the saving of blood to the patient was the only thing necessary, or even one of the principal requisites to insure success in surgical operations, we could not be too careful in taking advan-

tage of every appliance to attain that object, but experience forces me to believe that the loss of blood in ordinary amputations and other surgical operations, has very little to do with the result in a vast majority of them. How often in other cases, as in epistaxis in children, in *post-partum* hemorrhage, and puerperal eclampsia, do we have the loss of vast quantities of blood, yet with the most successful terminations. In puerperal eclampsia the physician will occasionally take from thirty to one hundred ounces of blood, and the patient afterwards speedily recovers her health again. There is no doubt, that, by loss of blood, as after a copious venesection, or where in an accident great vessels have been opened, the quantity of that fluid in the system is diminished, and anæmia may result for a short time, after which, by rapid absorption of fresh matter, the amount of blood speedily becomes in quantity as before. The blood is undoubtedly for a still longer time of a different composition than before the abstraction, containing fewer corpuscles, a deficiency of the salts, and more water and albumen, but this state is more properly one of spanæmia than anæmia. But I do regard it to be advisable in all surgical operations, when at all practicable, to keep the general circulation as normal as possible; therefore, upon primary cases following great loss of blood, every effort should be made to prevent further loss, forcing as much of the blood from the limb into the general circulation as possible before amputation; in which effort we would not induce an abnormal but promote a normal state of the bloodvessels. This procedure is also advisable in many other operations, as in the removal of tumours and other morbid growths, in operations upon the extremities, and particularly in resections when the tissues are not infiltrated with pus or unhealthy sanies, and in which there is no curtailing of the body, as we have in amputations.

But even in primary cases resulting from severe injury or otherwise, unattended by loss of blood, I doubt the propriety, in amputations, say of the thigh at the upper third, of attempting to force all the blood contained in the limb into the general circulation of the remaining portion of the body. The effort if accomplished would surely produce an abnormal and hyperæmic condition, in which a preternatural accumulation of blood in the capillary vessels of the brain, or some other organ, may follow, until these vessels, increased to double or even triple the ordinary size, then not unfrequently become ruptured. I have amputated the thigh quite a number of times in private and in military practice, more than a dozen times at the upper third, three-fourths of which recovered, and I have been well satisfied always to leave the blood in the limb, together with the pus, sanies, and septic matters with which the tissues may have been saturated, stopping the flow of blood the moment before using the knife by compression at the inguinal region with Petit's tourniquet with a strap long enough to pass around under the perineum, up behind

the pelvis, and then forwards over the crest of the ileum and buckled in front. I would, however, advise in many instances the use of Esmarch's *elastic cord* instead of Petit's tourniquet to arrest completely the flow of blood from the system, dispensing with the *elastic roller* to the limb in all cases like the following, which I give in this connection as fair samples of those usually requiring amputation, except upon the battle field, or after great accidents.

CASE I.—Isaac B. Jefferis, 46 years of age, a farmer, six feet in height, healthy and of active business habits, was injured by a horse on the 26th of June, 1874, receiving a complicated fracture of the left leg, in which both bones were comminuted at the ankle, the soft parts injured and torn open some three inches on its external aspect. I made every possible effort to save the limb, but on the 29th, the foot was cold and the ankle was covered with the bullæ of traumatic gangrene, while the patient had nausea and vomiting, very restless and anxious, high fever, quick pulse, and no disposition to take the least nourishment. On the 30th he was more comfortable, less fever, pulse 120, the limb much swollen, the foot and ankle cold and gangrenous. July 1st more comfortable, entirely free from pain, pulse 120, temperature reduced, and the skin moist, the foot and ankle mortified, while the leg was much swollen to the knee, and the cellular tissues infiltrated with unhealthy sanies. Amputated at four o'clock P.M. Anæsthetic, equal parts of chloroform and Squibb's sulph. ether, two and a half ounces used, Petit's tourniquet applied, and the limb amputated at the middle third of the thigh, antero-posterior flap operation. The patient rallied well, the stump healed by first intention with hardly one ounce of discharge from the time of first dressing, and upon the fifth week from the date of injury he was attending to his business.

CASE II.—John Scott, 26 years of age, a farmer, was injured some three years since by a horse, and suffered for a long time afterwards with what was supposed to be chronic synovitis of the right knee. During the past eighteen months he became much worse, suffering intensely, and became reduced to the brink of the grave by long-continued and profuse suppuration of the whole limb. On July 24th, 1874, I found him greatly emaciated and so weak and his limb so painful that it was impossible for him even to turn in bed, pulse very feeble, and 140, skin cold and moist, the limb much swollen, very painful, the cartilages of the knee destroyed by ulceration, and the bones necrosed, while a large collection of unhealthy matter burrowed amongst the muscles up to the groin. It was thought to be almost impossible for him to stand the shock of amputation, but this being his only chance for life, I gave him four ounces of good whiskey, and soon afterwards had him under the influence of the anæsthetic—equal parts of chloroform and Squibb's sulph. ether, two ounces being required. Petit's tourniquet was applied, and the limb amputated at the upper third of the thigh, *bilateral flaps*, or half way between the antero-posterior and the lateral methods; loss of blood about four ounces. The patient rallied well, no doubt assisted by the whiskey, for in addition to the quantity given before the operation, four ounces were administered by injection upon the removal of the limb, and soon after two ounces more to drink. He was well nourished with whiskey punch, egg-nog, extract of beef, chicken broth, milk, etc., and recovered strength rapidly, the stump

healing slowly with moderate discharge, and he is to-day, August 17th, sitting up and will surely recover perfectly.

CASE III.—Some time since I amputated the thigh at the upper third in the case of a little son (14 years of age) of Mr. M. Wright, for encephaloid cancer of the knee. The foot and ankle were not much swollen, but the knee was almost as large as the patient's head, the skin unbroken, the bones of the joint entirely destroyed, and their place filled with a great mass of encephaloid substance and putrid fluid. The patient was greatly prostrated, and required only about one and a half ounces of the anæsthetic; the artery was compressed at the pubis by an assistant; antero-posterior flap operation; loss of blood about four ounces. He improved rapidly in strength, while the stump slowly but completely healed. Some months afterwards, I learned from his physician, that he died from an attack of pneumonia.

I could give many other cases, but these are sufficient at this time, and are good samples of those usually requiring amputation, and are certainly not such as should be regarded as favourable for Esmarch's method. In the hands of judicious surgeons the elastic roller and cord will without doubt prove a most valuable acquisition, yet their indiscriminate use should be avoided, for it is infinitely better for the patient to lose a few ounces of blood, even if in a prostrated and anæmic condition, than to force from the limb its poisoned blood, septic matter, or unhealthy sanies, or indeed even healthy pus with which the tissues may be saturated, into the general circulation to poison the whole blood mass, or into the structures forming the stump, thence to be absorbed into the system, or to slowly return and ooze from the cut tissues to poison them and retard union. I do believe it is possible for large collections of unhealthy matters to remain pent up in almost any portion of the body for a long time, and the system not be contaminated thereby, but not so when by violence we rupture these cysts and sinuses, together with the capillary vessels, and indeed even larger blood-vessels, and forcing these matters far beyond their original location into the cellular tissue and general circulation. In such cases pyæmia or septicæmia and death follow.

WEST CHESTER, Pennsylvania, Aug. 17, 1874.

ART. XIII.—*Amputations by Ligature and Elastic Cord.* By N. R. SMITH, M.D., Emeritus Professor of Surgery in the University of Maryland. (With a wood-cut.)

THE use of the ligature in aid of the knife, in amputations, dates with me some twenty years anterior to the present. This means of effecting the removal of parts has been strongly suggested by the remarkable case, familiar to my readers, of the penetration of the scalp and even the bones

of the cranium, by a fine gum-elastic band worn for a long time on the head of a young lady, as an article of dress. It was manifest from that case that an elastic cord, by its steady but gentle pressure, may penetrate the most resistant parts without causing such pain as to demand its removal.

The case which I shall first relate is one in which the silk ligature (inelastic) was employed.

I. Amputation of the Tongue by Ligature.—Early in Nov. of 1873, I was consulted in a remarkable case of enlarged tongue in the person of a young lady about thirteen years of age. She was accompanied by her physician Dr. A. S. White, a very intelligent practitioner of Montgomery County, Maryland.

The date of the origin of the disease was not accurately known; but it had been in progress for months. At the time at which it was first

submitted to me, the organ was permanently protruded from the mouth, and could not in any degree be retracted. The protruded portion was some two inches in length and an inch and a half in diameter, presenting the appearance here imperfectly represented. The teeth, above and below, had deeply impressed it, so that, when viewed laterally, it had the appearance of a pear of medium size. The teeth were distorted by long-continued pressure, and some of them lost.

There was but little sensibility in the organ, nor did she suffer much but from its dryness and rigidity. The deglutition of fluids was difficult, and



the mastication of solids impossible. However, she presented the appearance of being well nourished.

The extirpation of the hypertrophied portion of the tongue was, of course, demanded. Its section by the knife was discussed, but the anticipated hemorrhage, when the stump should be retracted into the fauces, and the difficulty of arresting it, forbid that expedient. I suggested the application of a silk ligature, and with the concurrent opinion of Dr. White in favour, proceeded to apply it. I employed a stout thread of saddler's silk and drew it with as much force as I well could. The thread sunk into the furrow caused by the pressure of the teeth. Much to my surprise it caused very little pain, and, while she was with me, she scarcely complained at all.

It was understood that Dr. White should apply a second ligature, and even a third, if necessary, at intervals of two or three days, and then use the scissors to separate any shreds that might remain. She was then taken to her country home.

Dr. White relates the sequel in a letter to me dated a few days after the first operation.

"I am pleased to inform you that I removed the tumour this morning, it being held by nothing but fascia. I separated it with scissors after the application of a fresh ligature, which I thought best, to guard against

hemorrhage in case there should be any bloodvessels not constricted. I am pleased to say that she has not lost more than an ounce of blood since the operation was commenced. The healing process is going on as rapidly and as favourably as we could desire."

In a letter of later date (Nov. 17, 1874), Dr. W. informs me that "the health of our former patient has been uniformly good since the operation. She has a perfectly healthy stump, and articulates well, notwithstanding the loss of several of the incisors, above and below. Deglutition unimpaired."

II. *Removal of a Tumour of the Rectum by the Elastic Ligature.*—I was recently consulted in the case of a lady of this city suffering from a tumour of the rectum. It was attached to the organ about an inch and a half above the verge of the anus by the cervix three-fourths of an inch in diameter. The tumour was about three inches in length and two inches in diameter. It had no epithelial investment like that of an ordinary hemorrhoidal tumour, but had the appearance of a sponge of loose texture saturated with blood. She could expel it at will, and it generally came down when she evacuated the bowels and had to be returned, which was easily accomplished.

A little blood was lost on those occasions, but there had occurred no copious hemorrhage. She suffered but little pain, but much mental uneasiness. She had used some remedies, such as are employed for hemorrhoids, but without effect. I could not regard the tumour as malignant, it having none of the characteristic pain of cancer; nor was the cancerous diathesis present.

I determined at once to apply the elastic ligature. I used a cord of gum-elastic about the size of a number 2 catheter, wrapping it six times round the neck close to the surface of the bowel, and tied it with a firm knot. I then returned the tumour into the bowel.

On visiting her the next day I found her complaining of very little pain, and the discharge of blood was very slight. On the third day the report was the same, and thus on, every day improving until, on the 21st day, the tumour was discharged without the slightest hemorrhage or any pain.

It is now a week since the discharge of the tumour, and the patient reports herself perfectly well.

In this case I think the wrapping of the cord five or six times round the neck of the tumour was important, as it gave to it much more compass of contraction, and rendered the constriction more uniform and constant. The gum-elastic cord is, moreover, non-absorbent and imbibes no putrescent matters.

I consider the use of a gum-elastic ligature, as illustrated by this case, an improvement of no small importance in surgery.

III. *Removal of the entire Uterus by Ligature and Knife.*—It is some thirty years since I was called to Mrs. Linthicum, living about four miles from Baltimore, suffering from inversion and complete prolapsus of the uterus. It had been caused, many months before, by severe traction on a retained placenta. It had been found impossible to reduce it immediately after, and, when I saw it, had been so long strangulated and hypertrophied that any attempt to effect its replacement was out of the question. Whenever she menstruated, the menstrual secretion would be seen exuding from the mucous lining of the uterus.

The patient had suffered so long from this condition of the organ, especially from the heavy traction of it, as she made efforts to keep about,

and the irritation caused thereby, that her health and strength were greatly impaired. At the time I saw her she was confined to bed, and it was manifest that, unless something could be done for her relief, she must soon sink. But I was apprehensive that, if I at once severed the neck with the knife, fatal hemorrhage would result. I determined therefore to ligate its neck with a flat ligature (tape-like), tying it with sufficient tightness to greatly impede the circulation, and diminish the volume of the neck preparatory to its section by the knife. I continued to increase the constriction daily for three days, the tape deeply impressing the neck; but the irritation became so great that I was compelled to incur the risk of immediate amputation. Accordingly, I made the section of the neck with one stroke of the knife. The stump was immediately retracted within the vagina, and a pretty copious gush of blood resulted. The flow was from an indefinite number of small vessels, which circumstance, together with the retraction, greatly embarrassed my efforts to secure the arteries. I was obliged to rely mainly on styptics and pressure, filling the vagina with a tampon, and supporting it with a T bandage. The patient, however, from irritation and loss of blood, became exceedingly prostrated, and I almost despaired of her recovery. On the fourth day she began to rally, and shortly recovered.

She removed from her country residence, and I never saw her again. She died some five years after the operation, from maladies bearing no direct relation to her uterine trouble.

I learned from the physician who attended her, that she regularly menstruated, though scantily, after the operation. I have the tumour now in my collection.

Had I been then acquainted with the use of the elastic cord, I doubt not that I could have removed the organ without the use of the knife, and with far less pain and peril to the patient.

ART. XIV.—*Syphilitic Intra-cranial Disease.* By C. ELLERY
STEDMAN, M.D., and ROBERT T. EDES, M.D., of Boston.

A. B., aged 32, single, yeoman U. S. Navy, entered Boston City Hospital 24th October, 1871, in the service of Dr. C. E. Stedman. The hospital record made by Dr. C. E. Wing, then house physician, is as follows: Family history rather obscure. He entered the navy thirteen years ago, and soon contracted gonorrhœa, which he has had several times. He does not know that he has had a sore on the penis, but has noticed abrasions at times, and thinks he may have had syphilis; was salivated ten years ago when he had yellow fever, and has taken no mercury since. He thinks he recovered perfectly from the results, but the gums now recede much from the teeth. Is rather bald, but never had any particular falling out of hair, and never noticed any eruption on skin. There are small hard glands in neck and groin, and another small one at the left elbow, none of them tender. Fifteen months ago he had ulcers in the throat, which were "burned with caustic;" these returned a year ago, when he was told he had syphilis, and took iodide of potass. with relief.

Six months ago he began to have "trouble in chewing" on the right side of jaw; a month later was taken with pain and numbness in right side of face and about right eye, and had three teeth extracted without relief; one month afterward "eye became affected." Then went to Rio Janeiro in a man-of-war, where, on account of increase of his disease, he was discharged, and has just returned home, "having been treated like a dog on the passage." He has taken much laudanum to gain relief from his great pains.

Patient in bed, much emaciated, weighing, he thinks, less than 100 pounds. Pulse 84; respirations 20; temperature 100°. Ptosis of right eyelid, which, however, he can overcome for a short time by trying. Tarsal adhesive inflammation. Cannot turn right eye inwards, or upwards and outwards; the other movements seem normal. There is constant numbness and some aching in parts supplied by the fifth cranial nerve of right side. He is troubled by mucus collecting in right nostril, and has slight deafness of right ear. The pupils are normal. Appetite good; bowels regular; micturition free; tongue pretty clean. Complains of pain in all joints; no apparent paralysis of limbs. He was put on twenty-grain doses of iodide of potass. thrice daily, and morphia *pro re nata*; and there was marked improvement. On the 28th he complained of some pain in the left side of face and body, which gave him a bad day. Around the left eye there is considerable redness and swelling, but no pain.

30th. Has had fair nights, under moderate doses of morphia. This morning has had some pain about the left eye, but the redness had almost gone; complains of anorexia. Pulse 104; respirations 20; temperature 99.2°.

31st. This afternoon patient finds that the sight of the *right* eye is almost gone; can just recognize the house physician. No pain of right eye of any amount, but the left eye continues painful. Now takes thirty grains of iodide of potass. thrice daily.

November 1. Says that with the right eye he can only see out of the "inside corner," and that not distinctly. The numbness of the right side of face continues; only slight pain about left eye to-day. He can now raise the eyelid freely, and the motions of the eyeball improve. An ophthalmoscopic examination of the right eye by Dr. Williams shows "retinal veins engorged; arteries small, and here and there obscured by exudation; papilla somewhat pushed forwards, and its outline indistinct."

3d. Sore throat, salt taste in mouth, eruption like acne on left face; the iodide omitted.

6th. All movements of lid and eye improved, and vision restored to the right eye; the numbness of right face much less, so that he says he "can feel pain as he used to." Still a little pain about both eyes.

8th. This day complains of considerable pain around *left* eye, and its vision is affected. Throat not sore. The iodide resumed in ten-grain doses. The ophthalmoscope shows the same changes in the left eye that were observed in the right, 1st November. Both pupils dilated.

10th. Much pain in both eyes yesterday afternoon, requiring several doses of morphia. This morning the right temple swollen, and several tender swellings on forehead.

13th. The swellings nearly gone. Had headache and vomiting yesterday. To-day some "stiffness" of right side of face, felt perhaps before, but not mentioned. The tip of the tongue is turned a little to the left when protruded, but not much. Still requires morphia.

18th. Vomiting and nausea each morning for several days. The iodide has been omitted again. A loose tooth was removed. The circumorbital pains are less; sees better with left eye than with right.

21st. Nausea checked, and pain almost gone, except from front teeth in lower jaw which are bare to the roots. Patient has gained flesh since his stay in the hospital, and looks like another man. He can, with a little exertion, move the right eye as well as the left; he is able to read the newspaper nicely with the left eye, and can see pretty well with the right; is up and dressed daily, and anxious to go home.

22d. Iod. pot. gr. v. ter die.

23d. Feeling hearty; eruption again appearing on face. Discharged.

December 9. Readmitted; continued to improve till twelve days ago, when for the first time he slept in a cold room on a bitter cold night, and next morning had pain "all over head" which lasted till two days ago, when all pain, except about the right upper canine tooth, ceased. Four days ago when applying cerate to eyelid he found he was putting it directly on the eyeball, and then for the first time discovered that there was loss of sensation there and in the anterior half of right side of head; the tooth was tender and the adjacent gum easily bleeding. The patient's eyeball can be freely touched without his feeling the contact; the conjunctiva a little injected and right side of face looks a little swollen. Has taken the iodide pretty faithfully since he left the hospital, and shows the effect by the eruption on the face. For the last three or four days he has vomited "yellow stuff" every morning. General health much improved; a small bit of dead bone came from the socket of a tooth drawn when he was in hospital before, several days after leaving it; has trouble in chewing; functions of body well performed; no febrile symptoms.

11th. Loss of sensation not complete, of parts described above; right temporal muscle much smaller than left, so that it can hardly be felt; right upper canine and lateral incisor extracted.

13th. Face nerve feels natural.

14th. Examined with ophthalmoscope by Dr. Wadsworth; nothing abnormal observed.

16th. Patient says he feels all "as it ought to be," except tenderness in gums from loss of teeth, and eye is "still queer, but coming all right." Discharged at his own request.

During the winter he lived in Roxbury, where he was attended by Dr. Stedman. He had almost constant pain over right eye, and took morphia in unknown doses; he was readmitted to the hospital.

March 12, 1872. Service of Dr. Borland. The record states that the sensation of the face was normal, but the cornea of right eye could be touched without feeling; the tongue protrudes in median line; constipated, but otherwise feels well; temperature 98°; pulse 84; respiration 22.

23d. Says that he has no pain when taking large doses of iodide of potass.

30th. Discharged relieved.

During the summer he was treated as an out-patient for ulceration of cornea of the right eye, but was otherwise sufficiently well to effect an insurance on his life; he was admitted again to the hospital.

August 29, 1872. Service of Dr. Edes. It is recorded that patient talks indistinctly and his statements cannot be relied on; says that since his last discharge from hospital his health has been poor and he has been growing worse lately. Yesterday he had diarrhœa and vomiting, which

continue; is in bed much emaciated; extremities cold; pulse 96; tongue coated; no appetite; much thirst; two or three dejections daily.

September 4. Ophthalmoscope showed fundus of each eye normal.

5th. Mouth drawn to the right; cannot move left side of face as well as right.

25th. Discharged.

Mr. B. boarded in a bleak spot in Dorchester during this very cold winter, and had a cold room; he gradually failed, losing his faculties, sensation, and motion; he died 25th February, 1873. The autopsy was made by Drs. Edes and Stedman.

Notes by Dr. EDES. All organs appeared to be healthy, except the lungs, the upper portions of which were studded with small tubercles, and the brain surface and substance somewhat congested; substance of the brain hard. A considerable amount of serum in the ventricles. In the *right* middle cerebral fossa the apex of the temporal lobe was adherent and softened, so that upon removing it small fragments remained attached to the dura mater. This condition extended over a space about an inch in diameter, lying partly over the Gasserian ganglion; dura mater thickened, but the bone beneath it appeared healthy.

Gasserian ganglion decidedly thickened as compared with that of the other side; optic chiasm surrounded with lymph, which was especially abundant upon the right optic nerve; upon the arteries of the Sylvian fissure upon both sides were seen white or thickened patches in the walls. In one or two places the arteries were covered with an exudation of lymph. Two bloodvessels on the posterior pyramids, one upon each edge of the floor of the fourth ventricle, showed similar thickened portions, especially on the left side.

On microscopic examination of the fresh specimens the *left* (comparatively healthy) Gasserian ganglion contained, besides nerve fibres and cells, numbers of small, round and oval (indifferent) cells. The right contained more of the same cells, some spindle cells, and more old fibrous tissue.

The soft substance adherent to the cerebral surface of the dura mater was finely granular, and contained round and oval nucleated cells. No healthy pyramidal cells were seen. Some yellow pigment in the course of the vessels. In one place a group of very darkly granular triangular cells was seen, evidently cerebral from their shape, but not presenting the usual appearance of fatty degeneration. It seems possible that the degeneration was of a calcareous character.

Sections of specimens hardened in chromic acid and alcohol showed a much greater abundance of connective tissue in the right Gasserian ganglion than in the left. Nerve cells and fibres were distinct in both. In the right, however, the single cells seemed to be somewhat more separated from each other. No clearly defined difference in the appearance of individual cells could be made out. The number of pigmented cells seemed larger upon the left. Pigment granules not in the nerve cells were seen on both sides.

Sections were made of the thickened arteries, especially of one not mentioned above, which was afterwards found at the base of the brain, partially embedded in the cerebral substance. The best starting-point in the examination of these sections is the muscular coat, which presents its normal appearance. Externally, we find a layer of many cells mostly round or oval, but in many places surrounding the *muscularis*, and evidently replacing or representing the adventitia. There is, however, no

distinct limitation, but the accumulation of cells spreads out upon both sides into the pia mater, and sometimes embraces many smaller vessels. At the point of contact of the artery with the cerebral surface and opposite to this, the cellular layer is less thick, and probably here represents pretty accurately quantitatively the *adventitia*.

Internally to the muscular coat, forming sometimes a ring of uniform thickness, and sometimes much thicker on one side than another, we find the *intima*, composed of parallel bundles of tissue with circular and oval spaces. Many or most of these spaces are occupied by a body which probably represents a nucleus. The spaces are more abundant and larger at the edge nearest the lumen of the artery and furthest from the *muscularis*. In some places these spaces or cells present very much the appearance of several irregular layers of epithelium lining the artery. The inner portion of the *intima* is stained with blood. Where the *intima* is most hypertrophied, the lumen of the artery, if we regard the circular fibres of the *muscularis* as occupying the normal position, cannot exceed one-half its former diameter, or one-fourth of its area.

Immediately beneath the artery, imbedded in the brain-substance from which most of the sections were made, the cerebral substance appeared, as it were, crowded, the outer layer being no longer distinguishable at this point, and the cellular elements being increased in number. The smaller vessels penetrating the brain may have had the nuclei of their sheaths somewhat increased in number, but this change was at any rate not very marked.

The changes in what is here spoken of as the outer layer of the *intima*, according to Kölliker, correspond quite nearly to those spoken of by Cornil in the inner layers of the middle coat in varicose veins. The structures described are undoubtedly similar. Cornil, however, states that the inner layer is distinctly marked off from the hypertrophied connective tissue of the *media*, which was not the case in our specimens; a difference possibly to be accounted for by the difference in the form between the epithelium of veins and arteries; the latter being longer and more spindle shaped.

In the arteritis described by Charcot and Bouchard, in connection with miliary cerebral aneurisms, the proliferation seems confined, or nearly so, to the external coat of the artery, the internal being slightly if at all affected.

This case presents several points of interest, beside the correspondence between the more prominent symptoms observed during life and the lesions discovered after death, which is sufficiently obvious.

The lesion of the ganglion here observed, namely—the hypertrophy of connective tissue, seems to be almost the only one to which the outlying ganglia are liable, except the atrophy of the fine nervous elements, which is, after all, probably a mere consequence or second stage. This atrophy could not be distinctly made out in our case.¹

¹ Since the writing of these notes an article has appeared by Petrow (*Virchow's Archiv*, 1873, lvii. 121, and *Centralblatt für die Medicinischen Wissenschaften*, 1873, p. 510), upon the changes of the sympathetic ganglia in persons affected with constitutional syphilis. He finds the interstitial tissue thicker and denser than normal, the nerve cells being more or less compressed and deformed. The nerve

The nervous and cerebral disorders associated with constitutional syphilis are interesting both in a theoretical and especially in a practical point of view, since symptoms of equal severity justify a far more favourable prognosis and are far more amenable to treatment when consequent on syphilis, than when the result of some non-specific lesion whose precise character it is usually difficult or impossible to diagnosticate. These symptoms are usually attributed to and in fact are very generally produced by syphilitic neoplasms or gummata, or by syphilitic periostitis. The latter mode is shown in our case so far as the lesion of the fifth pair is concerned.

It would certainly seem, however, that arterial lesions like those observed in this case must play an important part in the production of symptoms, and a recent author to whose writings I regret not to be able to refer more definitely, has suggested that some of the characteristics of syphilitic brain disease, and especially the rapidity of variation in the severity of the symptoms, and their frequent paroxysmal character may well be accounted for by supposing them to depend on vascular derangement. We can easily see how those variations in the size of the cerebral arteries which we have every reason to suppose are constantly occurring under the influence of the vaso-motor nerves, and which when the artery is healthy produce only normal physiological changes in the blood supply, may when their calibre is reduced to one-fourth—give rise to a more or less extensive and complete anæmia, and its consequent symptoms. Such might have been the case reported by Passavant. (*Virchow's Archiv*, xxv. p. 170.)

The permanent diminution in the blood supply too can hardly be without effect, and may account for the condition of dementia or “paralysie générale,” sometimes observed in syphilitic diseases, and indeed approached in our own case.¹

The connection between syphilis and aneurism too is a subject not without interest. Although such a connection is asserted, as for instance by Aitken, the causal nexus does not seem in all respects clear. Cases like the present, taken in connection with the views expressed by Virchow, and enlarged upon by Mr. Moxon (*Guy's Hospital Reports*, 1871-72), namely—that atheroma is not primarily a degeneration, but a chronic arteritis—would seem to show that the relation between the syphilitic

fibres may also be atrophied. The nerve cells contain more than the normal amount of pigment, and their protoplasm has undergone a colloid degeneration. The connective tissue cells forming their capsules are proliferated, and have also a peculiar homogeneous structure. These changes are compared to the interstitial inflammations caused by syphilis in other organs.

¹ Dr. Zespersen, in examining the records of 123 hospital cases of “general paralysis,” finds records of constitutional syphilis in 83, a possibility or probability of it in 25, and no data in the remainder. In 34 cases of his own, constitutional syphilis was found in 33 and the 34th had had a chancre. The time elapsing between infection and the beginning of the paralysis varied from 5½ to 20 years, the average being 12.—*Journal de Thérapeutique*, Decembre 10, 1874, p. 908.

dyscrasia and aneurism is by no means a distant one. Mr. Moxon, indeed, doubts whether the cases of aneurism cited by Aitken in support of his view are anything but coincidences, and this is of course possible with the arteritis in our own case. The undoubted specific history, however, the repeated though temporary improvement under treatment, the peculiar character of the symptoms, the age of the patient, the occurrence of the arterial lesions in various portions of the brain, and in connection with others more generally recognized as syphilitic, certainly give a high degree of probability to the view that the connection between constitutional syphilis, and the chronic endo- and ecto-arteritis was more than an accidental one.

Boston, November, 1874.

ART. XV.—*On the want of Symmetry in the Length of Opposite Sides of Persons who have never been the Subjects of Disease or Injury to their Lower Extremities.* By WILLIAM C. COX, M.D., of Norristown, Pa.

WITHIN the last few years much has been written concerning the advantages and disadvantages of certain forms of apparatus for the treatment of fractures of the lower extremities, each one being advocated to the exclusion of other forms, as producing better results in regard to the amount of shortening ensuing therefrom. The results in some of the cases being very remarkable, and having noticed that the pantaloons on one side became worn much sooner than that of the opposite side, it occurred to me that perhaps there might be a difference in the lengths of the opposite lower limbs in persons who had never received any injury to that part of the body. I proceeded to measure a number of such persons, and found while in some the length of their limbs was equal, in others it varied from $\frac{1}{8}$ th to $\frac{2}{5}$ th of an inch. There does not seem to be any uniformity in regard to one or the other side being the longer, twenty-three having the right side longest, twenty-five the left side longest, and six having no difference in the two sides. In taking the measurements of lengths of the lower extremities we need only a reliable tape measure, and a firm level surface for the person to lie upon. Before proceeding to measure we should be careful that the person lies flat on his back, and that a line drawn between the crests of the ilia should be parallel with the surface on which the body rests, and the limb on one side should have the same relation to the pelvis as that of the opposite side, and both should be as near in a line with the body as possible. We may place the initial end of the measure between the teeth, on top of the sternum, on the symphysis pubis, or on the anterior spinous process of the ilium. The latter is the point generally used, and the distance from this, or either

of the above-mentioned points to the internal malleolus will give the length of that side. We find most difficulty in taking the measure of very stout persons and young children. I prefer the tape measure to any apparatus for measuring that I have seen, on account of its simplicity, and its being adapted to all cases. From the table, which contains the measurements so far as obtained, it will be seen how often we must be disappointed if we expect to find no difference in the lengths of the opposite sides after fracture of the lower extremities even of the simplest character.

Name.	Age.	Right side longer.	Left side longer.	Name.	Age.	Right side longer.	Left side longer.
J. R.	38	$\frac{1}{4}$ inch		D. M.	45	$\frac{1}{2}$ inch	
P. M.	35	.....	$\frac{1}{8}$ inch.	J. N.	35	0	0
F. W.	37	.....	$\frac{1}{8}$ "	C. D.	25	$\frac{1}{2}$ inch	
P. D.	51	$\frac{1}{4}$ inch		J. B.	21	.....	$\frac{1}{8}$ inch.
G. H.	19	.....	$\frac{3}{8}$ inch.	G. S.	29	.....	$\frac{3}{8}$ "
G. K.	14	.....	"	C. N.	35	.....	$\frac{1}{2}$ "
J. S.	59	.....	$\frac{1}{2}$ "	J. N.	24	$\frac{1}{2}$ inch	
M. L.	50	0	0	A. S.	23	.....	$\frac{1}{4}$ inch.
T. E.	22	$\frac{1}{4}$ inch		J. S.	37	$\frac{1}{4}$ inch	
G. L.	28	.....	$\frac{1}{4}$ inch.	J. A.	26	$\frac{1}{8}$ "	
J. H.	23	.....	$\frac{1}{4}$ "	A. G.	22	.....	$\frac{1}{2}$ inch.
F. W.	21	.....	$\frac{1}{4}$ "	P. D.	25	$\frac{1}{8}$ inch	
D. H.	68	.....	$\frac{1}{4}$ "	S. E.	33	0	0
J. F.	24	.....	$\frac{1}{8}$ "	C. D.	55	0	0
M. F.	25	$\frac{3}{8}$ inch		J. K.	23	$\frac{1}{8}$ inch	
M. O.	28	.....	$\frac{1}{4}$ inch.	O. J.	35	$\frac{1}{4}$ "	
M. C.	45	$\frac{3}{8}$ inch		A. L.	29	$\frac{1}{4}$ "	
E. F.	40	$\frac{3}{8}$ "		T. P.	64	.....	$\frac{5}{8}$ inch.
E. G.	55	0	0	A. D.	22	.....	$\frac{3}{4}$ "
R. C.	42	$\frac{1}{8}$ inch		A. M.	23	$\frac{1}{4}$ inch	
P. L.	23	$\frac{1}{4}$ "		L. A.	29	.....	$\frac{1}{4}$ inch.
D. T.	47	.....	$\frac{1}{4}$ inch.	W. H.	42	$\frac{3}{8}$ inch	
J. B.	54	$\frac{3}{8}$ inch		W. C.	26	.....	$\frac{1}{4}$ inch.
S. P.	48	.....	$\frac{1}{4}$ "	F. W.	26	.....	$\frac{1}{2}$ "
J. S.	61	$\frac{1}{4}$ inch		T. B.	34	0	0
J. H.	52	$\frac{1}{4}$ "		R. B.	43	.....	$\frac{3}{8}$ inch.
T. B.	29	$\frac{1}{4}$ "		W. E.	2	.....	$\frac{3}{8}$ "

ART. XVI.—*Extensive Laceration of the Hand, caused by the Explosion of a Bottle of "White Gunpowder" while held in the Hand.* By B. J. D. IRWIN, M.D., Surgeon and Brevet-Colonel, U. S. Army.

THE following case of severe traumatic injury presents many interesting features in connection with the severity of the lesion, the nature of the treatment pursued, ending in almost complete restoration of the functions of the injured member, and affords another striking example showing the imperative necessity for unceasing caution while manipulating the oxy-salts of potassium and chlorine, or analogous explosive compounds.

The injury about being described was caused by the explosion of a compound known as "white gunpowder," a substance in common use in Mexico and others of the Spanish-American republics, and consisting of ferrocyanide of potassium, loaf sugar, and potassium chlorate

$$= K_4Fe''Cy_6 + C_{12}H_{22}O_{11} + ClO_3K.$$

Shortly after noon of November 12th, 1874, Professor K. was engaged in his laboratory demonstrating to a class of students the character and pyrotechnic properties of various chemical compounds used in the arts and in *civilized* warfare. After the explosive nature of a mixture of potassium chlorate and sugar had been shown by means of a drop of sulphuric acid, the professor took a bottle containing between three and four ounces of white gunpowder, and essayed to pour therefrom a few grains on a small wooden slab, placed within two or three feet of where the mixture of chlorate of potassium and sugar had been exploded, but the contents had barely touched the wooden surface when sudden and violent ignition took place, the flame passing upwards and into the bottle, which was held about four inches above the slab, and a terrific explosion of the whole contents took place, shattering the vessel and scattering the fragments in all directions, and with sufficient force to break and damage many of the apparatus and fixtures at several yards distance. Upon first impulse the cause of the disaster was surmised to have been the result of spontaneous combustion, or as a sequence of the percussion produced by the fall of the powder from the bottle to the slab, but subsequent investigations rendered it more than probable that the accident was caused by the contact of the powder with a particle of sulphuric acid that might have dropped from the glass rod used to carry the acid to the mixture previously experimented on, or that might have been blown to that point by the former explosive experiment. The atmosphere of the room was supercharged with peroxide of chlorine evolved during preceding experiments. To all these may be added the possibility that the friction produced by pouring the rough granules of powder through the ground mouth of the bottle may have been the source of ignition. Although it is stated¹ that this powder will not explode by friction or concussion, requiring contact with red-hot flaming substances, yet molecular change may have rendered the former modes possible, as this specimen had been prepared some five years previously, during which time it may have acquired properties differing materially from the article as ordinarily found. The force of the explosion was such that small particles of the shattered bottle impinging on the convex surface of thick heavy glass vessels made perforations therein similar to those usually produced by a gunpowder projectile when fired through glass at close distance. Two or three of the students seated on the front seats, received contusions and slight flesh wounds from small fragments of the glass.

The point of greatest resistance to the explosive force was the centre of the palmar aspect of the right hand of Professor K., the palm thereof having been rent and torn into numerous shreds, the thumb disjoined at its carpo-metacarpal attachments, the arteries constituting the superficial and deep palmar arches were dis severed and poured out their contents freely, and the muscular tissues were bruised and contused to an extreme degree. Being close by at the time of the explosion I saw him a few

¹ Vide Wagner's Technology, p. 154 *et seq.*

moments afterwards, and, having wrapped the hand up temporarily, had him conveyed to his quarters close by. Considerable shock having been produced, brandy and water were administered. Two vessels required ligation, and hemorrhage from several small branches was controlled by torsion or the application of the liquid persulphate of iron. Some twenty silver wire sutures were required to bring the lacerated points of the integuments together, as far as it was practicable to do so, after which the wounds were dressed with lint saturated with carbolized glycerine, one volume to seven, covered with oiled silk and a roller bandage. The limb was then placed on a suitable splint, the fingers and palm extended, and the whole supported by a handkerchief sling suspended from the neck. A fragment of glass had laid open the ultimate joint of the little finger of the left hand, and there were two extensive lacerations of the ring finger of the same hand. Arterial hemorrhage from the little finger was controlled by the application of persulphate of iron, after which the wounds in these fingers were dressed with the carbolized glycerine and suitable bandages. The patient having a strong repugnance to chloroform, anæsthesia was not resorted to; nevertheless, he bore the pain and suffering attendant on the necessarily tedious process of adjusting the dissevered parts with remarkable patience and fortitude.

8 P. M. Has been quite nervous and restless. Had his clothing removed and found four small contused wounds on the right leg and thigh, one of which had bled a considerable quantity without detection; complains of a sense of fulness about the right hand. Some oozing of blood having taken place, I removed the outer bandage and substituted a many-tailed bandagetherefor. Half a grain of sulphate of morphia was administered and quiet enjoined. An hour later I saw him again in company with his relative, Professor E. R. Peaslee, and repeated the morphia, after which I left him with injunction to court sleep by repose and quiet.

13th. 8 A. M. Slept about four hours during last night, but not until after two and a half grains of morphia had been taken to induce sleep. Complains of intense pain in the hand, shooting from one point to another. Opened the outer dressing and saturated the under layers of lint with carbolized glycerine. Ordered milk-toast and an omelet as diet, and perfect quiet enjoined.

14th. Feels very comfortable, having slept all night and the hand being almost free from acute pain. Carbolyzed dressing applied through the original dressing so as not to expose the wounded surface to the action of the air.

15th. Continues to do well. Sleeps well, appetite good. Bowels moved by Seidlitz powder.

16th. Doing well. Appetite excellent. Repeated dressing, and allowed soup, chicken, quail, fruit, and milk, as may be desired.

17th. Sat up in an easy chair some eight hours. Continue diet and treatment same as yesterday.

18th. Did not sleep as well as usual, and complains of failure of appetite. Ordered *fld. ext. cinch. arom. ter in die. Haust. cit. magnes.* to move bowels, which show a tendency to constipation—potassium bromide *gr. xx* at bedtime to be repeated *pro re nata*.

19th. Feels better, but complains of loss of appetite. Continued treatment, and ordered fresh cider at his request.

20th. Somewhat better. Sat up several hours during the afternoon of

yesterday. Appetite capricious. Ordered raw oysters, cream, and milk *ad libitum*.

21st. Slept better and feels better. Beef-tea and a glass of sherry twice a day.

22d. Some slight oozing through dressing; lifted up the edges of the inner dressing and poured carbolized glycerine directly on the wounded surface, which appears to have reunited without suppuration.

25th. Continual improvement—feels in excellent spirits; sleeps well, good appetite, no pain in hand.

While sitting chatting with the patient he sprang in his seat, as if he had been stung by a hornet, and said he had a violent and sudden twinge in the nerves of the fingers, which occurred again in a few moments, but with less severity. States that he had two or three twinges on the preceding day, but paid no attention thereto, as they were not severe, and he imagined they were caused by the process of reunion. Ordered potassium bromide gr. xv *ter in die*, and continued former treatment. At my evening visit found him comfortable and more cheerful than usual, although disturbed by an occasional violent twinge or jerk in one or other of the fingers of the right hand. From these symptoms I deemed it prudent to open the dressing and examine the wounds, in order that I might act as their condition might indicate. Assisted by Dr. Fitzgerald, U. S. Army, I removed the dressing, and was much gratified to find the wounds united by first intention at almost all points, presenting a perfectly healthy condition and promising most satisfactory results.

The centre of the palm shows healthy granulations where the integument has been completely destroyed. Removed with caution and without pain the silver sutures, but the two ligatures were allowed to remain, not having become detached yet. Painted the palmar aspect of the fingers with a mixture of tincture of iodine $\mathfrak{z}\text{j}$, morphia sulph. gr. viij, with three or four coatings; then reapplied the carbolized dressing on successive strips and layers of lint soaked in a solution consisting of five parts of glycerine to three of carbolic acid. No pain was caused, and no notice of the disagreeable tetanic sensation up to ten o'clock, at which time I left him for the night. Potassium bromide gr. xx, to be taken *pro re nata*. Nothing transpired to cause the patient to even surmise that I had any suspicion of impending danger.

26th. Found him comfortable at my morning visit after having had a good night's rest without having had to resort to the sedative. The twitching has almost disappeared, there being nothing more than an occasional formication about the fingers. Repeated the application of the iodized morphia and carbolized glycerine. He says he feels great mental relief at the removal of the sutures, as he feared the process would prove a very painful ordeal. Evening. Passed a good day—no pain or twitching worth noticing. Bowels moved by citrate of magnesia; appetite excellent—beef-tea, milk, cream, and similar nutritious diet allowed according as they are fancied.

27th. Passed another comfortable night. No pain in hand more than a slight feeling of discomfort. Continue treatment as before.

28th. Continued improvement. Remained up until ten o'clock P. M. last evening. Slight pain in fingers, to relieve which the stronger carbolized dressing was applied.

29th. One ligature came away, the other not yet detached from bottom of wound. Removed dressing from fingers of left hand, and found the

wounds in the little and ring fingers completely healed; no evidence of the slightest suppuration having taken place during the reparative process.

December 1. Steady improvement. The wounds in the lower limbs are not yet healed, as the dressings had to be removed and re-applied daily, owing to the difficulty of keeping them in position. Unlike the wounds in the hands, these have suppurated and are healing over by granulation. During this process a series of phlegmons have succeeded each other in the vicinity of the wounds in the thigh, and have caused a good deal of suffering and constitutional disturbance. Ordered *cit. ferri et quin. f5ij, fld. ext. cinch. arom., syrup. zingiberis, spirits vini gallici, aqua, aa f5ij. M.* A tablespoonful to be taken three times daily.

5th. While the patient was being dressed, secondary hemorrhage from the superficial palmar arch took place. Pressure on the radial and ulnar arteries restrained the flow of blood until assistance arrived, when the bleeding was controlled by compresses, lightly applied over those vessels, and by the application of a saturated solution of persulphate of iron to the mouth of the bleeding vessels.

8th. No return of hemorrhage—patient comfortable, with good appetite, and enjoys plenty of sleep.

12th. Continues to improve. The wounds in the right hand have entirely healed except a small spot in the centre of the palm, through which the ligature still hangs attached, its knot preventing its detachment by gentle traction. Went out to-day for the first time.

25th. The remaining ligature came away this day, leaving the hand in a much better condition than there was any reason to hope for under the most favourable expectations. The recurrence of boils on the thigh has continued to give much annoyance.

January 1. All dressings dispensed with from this date. The power of flexion in the thumb and fingers, and sensation in the second and third phalanges of the first, second, and third fingers, are considerably impaired. To overcome the former, gentle passive motion in flexion and extension is kept up daily, and for the latter a mild Faradaic downward current passed through the radial and ulnar nerves every alternate day. Despite the disadvantages of a highly nervous temperament and the extremely sensitive character of the extensive cicatrized surface, the condition of the hand and fingers continued to steadily improve, so that the professor was able to resume his professional labours, and was returned to duty on the 31st of the month, with the prospect of the limb ultimately regaining all its lost power.

Remarks.—When the extent, character, and location of the principal injury, the terrific force and shock that produced it, the age and temperament of the subject, the danger from tetanus in injuries of this nature, and the presence at one time of premonitory symptoms indicative of the advent of that fearful complication, are taken into consideration, the results obtained are far better than could have been hoped for under the most favourable circumstances. To the antiseptic treatment I believe the satisfactory progress and termination of the case are principally due. Had the usual course of removing the dressing from and exposing the wound once or twice a day to the air been practised, suppuration doubtless would have supervened, and with it the lurking danger from tetanus would have been

vastly increased, to say nothing of the constitutional effects likely to result from extensive suppurative inflammation. Had that course of treatment been pursued, the satisfactory results obtained could not have been secured, and, indeed, it is not beyond the range of probability that the sacrifice of the limb might have become necessary in order to preserve the life of the patient. The local anæsthetic effect of the carbolic acid added materially in maintaining the tranquillity of the patient, while preserving the wounds free from pyogenic tendencies.

January, 1875. Status presens.—The functions of the hand have steadily improved, and would be almost restored to perfection could the patient be induced to submit to suitable manipulations to produce complete flexion and extension of the fingers on themselves. Sensation has been gradually and almost fully recovered, a slight paresis being all that remains to indicate the places formerly deprived of feeling.

U. S. MILITARY ACADEMY, WEST POINT, N. Y.

ART. XVII.—*Description of a Splint for Combined Suspension and Extension in the Treatment of Fracture of the Lower Extremity.* By T. W. SIMMONS, M.D., of Hagerstown, Maryland. (With a wood-cut.)

THE combination in one apparatus for accomplishing two objects, extension and suspension, which separately have become highly esteemed in the treatment of fractures of the lower extremity, is the object of the instrument which I shall describe.

Experience in the treatment of fractures of the leg has not sustained the advantages of the flexed position over the straight.

The relaxation of the muscles while a fractured leg is held in a state of flexion, rather favours lateral displacement than otherwise; nor does it prevent, as has been abundantly shown, excessive overlapping and shortening, while, at the same time, it is most unfavourable to the application of any efficient method of extension at present known. In point of comfort the flexed position possesses no advantage over the straight.

The increasing favour which the principle of extension has received since introduced in 1824, by Dr. Luke Howe, has proved it to be important and almost indispensable in the treatment of fractures of the femur, in order to prevent inordinate overlapping of the fragments, to maintain apposition in a straight line, to subdue all perturbed action of the strong muscles to a state of quietude, and at the same time, render them agents of support. Extension can likewise be applied with great advantage to fractures occurring below the knee, as it sustains adjustment in a straight line without the need of tight dressing; this particularly

obtains when the fracture is seated at or near the ankle-joint, where but light pressure can be borne without soon becoming painful, and where lateral displacements are so liable to occur. It is not excessive, but moderate, uniform, and uninterrupted extension that is required to accomplish these results—extension sufficient to fatigue and overcome the contracting irritated muscles. Pressure made against the perineum and axilla by any of the counter-extending appliances in order to produce forced extension of a fractured leg, is altogether to be condemned as unnecessary, painful, and restraining, the weight of the body itself exceeding the power of extension required, somewhat, for example, in the proportion of 120–150 lbs. to 10 or 15 lbs., establishes at once all the counter-extension that could practically be desired, and by elevating the foot of the bed by three or four inches, it will be found to prevent, in a great degree, the tendency which is sometimes shown to move downwards in bed.

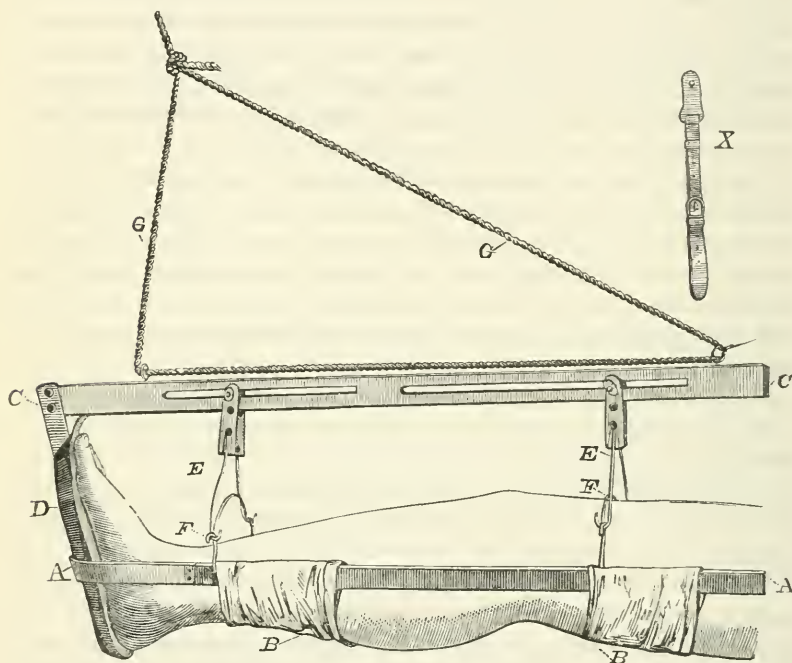
The principle of suspension in the treatment of fracture of the lower extremity has not been so generally adopted as that of extension or as it deserves to be. The advantages of suspending a fractured leg are positive, the patient being at liberty to sit up, to take the semi-erect posture, to change position from his back towards either side, and to move from one side of the bed to the other; it particularly facilitates the using of the bed-pan.

In the treatment of fractures of the lower extremity by any of the ordinary methods, the limb is in a great degree immovably fixed in one position, and any attempt to change the position of the body must almost of necessity impart motion to the seat of fracture. But if the leg be suspended, this motion will be expended in swinging the leg, and thus change the axis of motion from the fractured point to the suspending cord, and preserve it against displacement. There is a strong desire felt to move a painful member, and if this be prevented it must add to the patient's discomfort in a manner easily to be imagined, and the facility to move a painful fractured leg will add as much to the patient's comfort as that afforded by moving any other painful member, provided it does not disturb the seat of injury; suspension, therefore, not only allows the patient to move his body as comfort may dictate, but at the same time insures a freedom of motion to the injured limb which affords comfort and protects adjustment.

Suspension is, therefore, no less valuable than extension.—Several attempts have been made to combine these two principles, but in these the extension was made from a fixed point beyond the foot, as by cord, pulley, and weight, thus virtually tying fast the foot, while the leg was in suspension. Under this arrangement it is evident that the least swinging of the leg must change the line of extension to an angle with the long axis of the limb, thereby foiling its object, which can only be obtained by an apparatus that will move freely with the limb whatever its motion may

be, and maintain at the same time a constant power of extension in a direct line with the long axis of the limb.

In the year 1869, recognizing the importance of securing both suspension and extension, I devised, and had constructed during the winter of 1872, what I have termed the *Suspensio-Extensory Splint*, which was shown to Prof. Christopher Johnston, of Baltimore, Md., who approved its construction, and exhibited it to his class, at the University of Maryland, during the session of 1873-4.



The accompanying figure represents this splint. The horizontal bar *c c* is made $\frac{7}{8}$ in. thick, $1\frac{1}{2}$ in. broad, by 3 ft. in length, is joined to a foot-board *D*, of like thickness, $3\frac{1}{2}$ inches at widest part, above 3 inches at heel, by $13\frac{1}{2}$ inches in length, being somewhat shaped like the bottom of a last on its external surface. To this horizontal bar are suspended two side splints *A*, by means of four wire bearings *E E*, provided with a perforated attachment above, through which two thumb-screws pass, in order to raise or lower the limb that the foot may be brought in position to receive the foot-board. These side splints, being 1 inch wide, are to extend 2 inches from above the sole of the foot up the whole length of the limb; they are held parallel, and at any desirable distance between each other, by two arches made of strong wire twisted upon themselves, to form eyes *F F*, through which the bearings are hooked. A most important point to be

observed in its formation is the angle between the horizontal bar and foot-board c, which should accurately be one of $11\frac{1}{2}^{\circ}$, that the foot may maintain a natural and easy position without its being too much extended on the one hand, or held too erect on the other; and as it is very important to preserve this angle intact, the horizontal bar and foot-board should be firmly and immovably joined together. The figure x represents a leather strap and buckle, four of which may be substituted for the wire bearings, as seen in the above representation of the splints. By this modification, the horizontal bar, with foot-board, constitutes the entire instrument, which can be readily constructed by any ordinary mechanic, and is adaptable to almost any sized leg. These bearings are provided with loops below, through which the splints are to pass, before being bandaged to the limb. Simple plastering laths, or something similar, readily to be procured, will serve the purpose of side splints; and in order to prevent too much lateral pressure from them, a simple stretcher, made of light wood, should be placed between the opposite bearings and allowed to rest on the upper aspect of the limb. This arrangement, though not so elegant as the apparatus herein represented, combines the same principles. In case of compound fracture a side splint made of common hoop or strap iron, about 1 inch wide, should be used instead of a straight wooden side splint, as it can readily be bent with the hand to form a bracket or bridge to correspond with the wound and form a fenestra. This material, when well wadded and wrapped, is sufficient to fulfil the office of side splint in every other respect.

In the application of the suspenso-extensory splint I have adopted the following method, but every surgeon will most likely use his own taste and ingenuity in this respect.

The head of the bed upon which the patient is to be laid should be removed several feet from the wall, directly under a pulley which has been firmly fixed in the ceiling, so that in the beginning the leg will be suspended at a perpendicular to the pulley, and by degrees, as an increased extension is desired, the bed is to be removed towards its former position. Two straps of strong adhesive plaster, about $2\frac{1}{2}$ inches broad by $2\frac{1}{2}$ feet in length, are next to be applied on each side of the leg, so as to allow about one-third of their length to project beyond the foot, in order to embrace the foot-board. When the fracture is seated at or near the ankle-joint, a well-adjusted gaiter is the proper substitute for the adhesive bands, as the space from below the fracture is too short to admit of the plaster getting sufficient hold. After the side splints are well wadded and wrapped they are to be placed on each side of the leg, extending from two inches above the sole of the foot to the body. When the fracture occurs in the upper third or neck of the femur, the outside splint should be made long enough to reach some distance above the hip-joint, to be secured by a bandage passed around the body; from one of these side splints to the

other loop a bandage BB back and forth under the fleshy parts of the thigh and calf, where the greatest weight of the leg should be received, at the same time they will prevent the side splints from rising under the outside bandage when suspension takes place. After the bearings have been placed in proper position as afforded by means of two slots formed in the horizontal bar so as to equalize the weight of the leg between them without reference to the seat of fracture; then a bandage should be well applied from the ankle to the body. The leg should next be swung, and if the foot is found to be too high or too low to correspond with the foot-board, the bearings should be so adjusted as to secure this adaptation.

The extending bands A should now be brought firmly around the foot-board so as to hold the foot in close contact with it; and if at any time by their stretching or otherwise the foot is found to separate from the foot-board, the extending bands should be detached from it and reapplied as before, their adhesive properties will not be impaired thereby, but strongly unite with the wood even without heat. A short bandage should then be applied around the foot and foot-board, so as to be conveniently removed if necessary to readjust the extending bands, without disturbing the longer bandage.

In common with suspension and extension another important feature is combined in the splint, viz., the very perfect manner in which all tendency to eversion of the foot is overcome, the foot being secured to the foot-board, not only affords a firm rest for it in all directions, but it very effectually obviates the troublesome tendency to eversion which exists in nearly all fractures of the femur. In suspending the limb, the cord GG should be passed over the pulley from behind, and brought down to pass first through the eye fixed near the upper end of the horizontal bar, then along the bar to the second eye next the foot-board, then carried up vertically, to be tied to the descending cord. The cord should be long enough at its free end so as to be secured within reach of the patient, that he may elevate or lower the leg at pleasure. The power of extension is increased in proportion as the cord is made oblique, and for all practical purposes it is unnecessary at any time for the obliquity of the cord to exceed an angle of 45° to a perpendicular; but by the application of a dynamometer to the free end of the horizontal bar, the degree of extension exerted can be estimated when deemed necessary. By this principle of extension there is developed a very important and beautiful adaptability of power to resistance which is not to be found in any other principle of extension, viz.: When the limb is large and muscular, medium in size, or small and weak, the degree of extension produced will be always in proportion to the degree of extension required.

ART. XVIII.—*Report of a Case of Leukæmia, with an Analysis of Sixteen Cases in Relation to its Descriptive Pathology.* By GEO. A. MURSICK, M.D., of Nyack, N. Y.

VIRCHOW distinguishes two forms of leukæmia, viz., the splenic and the lymphatic, and remarks that they are not unfrequently combined in the same individual.

I have recently met with a well marked typical case in which both the spleen and lymphatic glands were greatly enlarged, and which pursued its remorseless course to a fatal termination in spite of all efforts to stay its progress.

C. H. G., male, aged 21 years, father living and in robust health, mother died of phthisis pulmonalis. During his early years was not very robust, and at the age of puberty was threatened with pulmonary disease, which he finally overcame. I examined him on June 2, 1874, and upon inspection found him with an *asymmetrical skeleton*, the left half of his body being distinctly smaller than the right. The long bones of the upper and lower extremities measured three-fourths of an inch less in length than those of the right side, and were considerably smaller in diameter. In the fall of 1871, the glands on the right side of the neck commenced to enlarge, and have since continued to increase slowly in size until they now occupy the whole of the right side of the neck and axilla. The cervical glands of the left side commenced to enlarge about six months ago, and are now as large as walnuts; spleen very much enlarged; extends down as far as the umbilicus, and bulges out prominently below the margin of the ribs. Until within the last three months he has been up and about, but is now confined to his room; he has lost twenty-five pounds in weight during the past year; his complexion is pale and sallow, and he is profoundly anæmic; his appetite is, and always has been good; his strength is failing; has slight paroxysm of fever, and sweats some at night; neuralgic pains, quite sharp at times, shoot down the arms and side; his lungs are sound, and there are no dropsical effusions; early in May had a free epistaxis which has not since recurred; examined three specimens of his blood under a one-fourth inch objective, and found the white corpuscles very largely increased in number; also, globulines in abundance. The red corpuscles were positively diminished in number, and presented a shrivelled appearance.

These specimens were compared with the blood of his father, and with some of my own. The difference in appearance was quite striking, even to his father. The diagnosis being fully established, I determined to try the effect of iodine upon the glandular enlargement, as it had served me well in enlargements from other causes. Ordered: R. Potassæ iod. gr. v; tinct. chinchonæ co. ℥j, three times daily. The dose to be gradually increased until it reached xxx grs. per diem.

June 17. The glandular enlargement is very much reduced; spleen about the same; strength diminished; but appetite continues good; the neuralgic pains have been controlled by morphia sulph. q. s.; is taking gr. xxx of the potass. iod. daily.

22d. The glandular enlargements continued to decrease; feels weaker though he takes an abundance of food; has a copious iodic eruption upon

his skin; complains of severe pain in the region of the spleen, which is considerably reduced in size; reduced the dose of potass. iod. to gr. v, three times daily, and ordered two of Blancard's pills to be taken at noon; also, tinct. of cannabis Indica in half drachm doses *pro ne nata*, to control the pain.

28th. Sharp pains in the region of the spleen and in the abdomen continue; is very irritable at times; does not sleep well, and has some fever at irregular intervals; has had some diarrhœa, which was controlled by chalk mixture; spleen and glands of neck and axilla are much smaller, and he continues to lose strength; suspended the potass. iod. and ordered R. Quinia sulph. gr. v, and pulv. digitalis, gr. ij, morning and evening; to continue Blancard's pills, and to take spts. vini Gal. ʒiij daily; he takes a good quantity of food; meat, milk, eggs, fruit, etc. Frequent examinations of his evacuations have been made; they show the food to have been digested, as none passes from him as taken.

July 1. Is gradually growing more feeble, and is very restless and irritable; fever continues and is followed by sweats; the pain in the spleen continues, and there is some effusion within the abdomen. Does not sleep well. R. Pulv. Dover. gr. x, at night.

2d. Examined the blood again; found a slight increase of red corpuscles—they are no longer shrunken. Urine, scanty and high coloured, sp. gr. 1024, very acid; on standing it deposits an abundance of urates and mucus; no albumen.

7th. Emaciation increased; fever less; *sweats profusely* at night, especially on the left side of his body. Bowels are loose—the stools thin and fetid. The abdominal effusion has increased, and his face, hands, and feet look puffy; is more feeble; pulse 120; appetite continues good. Ordered R. Quinia sulph. gr. x, pulv. digitalis, gr. iv, morning and evening. R. Pil. Blancard, No. 4, daily. Continue Dover's powder at night, also to have brandy ʒiv daily.

10th. Bowels have been quite regular, has had but one evacuation during the past 24 hours. For the past two days has had great difficulty in urinating, and complains of pain at the neck of the bladder. Ordered hop poultices to abdomen, and R. Potass. bicarb. gr. xx, in solution every two hours, which relieved him for the time. Checking the diarrhœa has caused an increase of the fluid in the abdomen, which by pressure upon the bladder renders micturition difficult.

12th. Passes urine quite freely, and without pain. The œdema of hands, feet, and legs has increased; appetite fair; pulse ranges from 100 to 110; has but little fever, and does not sweat so profusely; is gradually growing weaker.

15th. General condition much the same. Ordered R. Ferri pyrophosphat. gr. ij; quiniæ sulph. gr. ij; strychniæ, gr. $\frac{1}{30}$; acid. phosphoric. dilut. ʒss, to be taken in solution three times daily; also to take gin in place of the brandy.

21st. Bowels are quite loose; hands and legs are more swollen; abdominal dropsy increased. For the last three nights the fever has increased, and last night he was slightly delirious; pulse 140; takes sufficient nourishment and digests it.

23d. There is now general anasarca; his respiration is embarrassed from œdema of the lungs; diarrhœa increased; pulse continues about 140; fever less.

25th. Exhibits a great deal of mental hebetude and sleeps a great deal;

bowels very loose, but not sufficiently so to prevent an increase of the anasarca. I attribute the mental hebetude to œdema of the brain. Ordered R. Ammon. carb. gr. v; fluid. ext. juniperis, 3j, every 6 hours.

27th. Appears much brighter to-day; passes urine freely and takes food with a relish.

August 4. The apparent improvement did not last long; he is gradually growing more feeble, and the general œdema is steadily increasing, in spite of the diarrhœa, which only serves to weaken him; passes but little urine. Ordered: R. Infus. digitalis, 3iv, in divided doses daily; and Tinct. ferri chlor. gtt. xx, three times a day.

8th. Has been very restless during the past 24 hours, and is very feeble; respiration is much embarrassed by the pulmonary œdema, which is increasing. He died suddenly at 10 o'clock A. M.

No autopsy was permitted.

Remarks.—In the report of this case there will be found noted nearly all the symptoms and lesions included in the descriptive pathology of the disease. With a view to determine their frequency, I have carefully examined the history of *sixteen cases* reported by various competent observers. The result is as follows:—

The blood.—In all the cases there was found a large increase in the number of white corpuscles. Leucocytes with multiple nuclei and globulines with a single nucleus predominated, according as the spleen or lymphatic glands were most enlarged. A positive diminution of the red corpuscles was noted in some of the cases, but it is probable that this occurred in all of them.

The spleen was found to be enlarged in fifteen cases; the enlargement being attributed to hyperplasia of its interstitial stroma, or connective tissue. In a few cases it was found to be softened.

The lymphatic glands of either the neck, axilla, or abdomen, were enlarged in *nine cases* only—hyperplasia of the glandular tissue, with increased formation (hypergenesis) of cells. Pigmentary deposits in them were noted in three cases.

The liver was more or less enlarged in ten cases, the enlargement being attributed in some of the cases to “simple hypertrophy,” in others to hyperplasia of its connective tissue, which is the better explanation. Vascular engorgement has also much to do with the increase in size of both liver and spleen.

Dropsical accumulation occurred in eleven cases; in many it was general (anasarca), in others it was noted as ascites, pleuritic effusion, œdema of the limbs, etc. It appears to be of the passive variety, and due to mal-nutrition and visceral obstruction.

Diarrhœa.—This is noted as occurring in *seven cases* only, and is attributed in some of the cases to irritation of the intestinal glands. It appears to be conservative in its character, an effort on the part of nature to relieve the system of its surplus fluid.

Fever followed by sweats is noticed in *six cases*, and is of the so-called

"hectic" or irritative type, occurring at irregular intervals, and is of low grade.

Hemorrhage occurred in seven cases, most often from the nasal cavities and intestines. It is noted as being cerebral in one case, as intra-peritoneal in another, and from an unhealed wound in another. It does not appear that it occurs as a consequence of the "*hemorrhagic diathesis*," as has been stated.

The condition of the appetite is stated in five of the cases as being good, in one case as ravenous, and in another as extraordinary. Pallor due to anæmia, more or less emaciation, a gradual failure of the vital powers, and finally death occurred in all cases. Heart clots and thrombi in the larger vessels are generally found post-mortem.

Whatever the precise nature of the disease may be, it is evident that profound structural lesions occur in the organs engaged in the elaboration of the blood, viz., the spleen, lymphatic glands, and liver, as well as in the blood itself; and though a sufficiency of nutriment is taken and digested, it is evidently not assimilated.

Whether leukæmia be a disease *sui generis*, or only a peculiar condition of a cachexia which shows itself under manifold variations, is a question still *sub judice*. I am inclined to the latter opinion. A temporary increase of the white corpuscles has been observed without any of the above conditions, or any serious consequences following; and, *per contra*, all the above conditions may be present without an increase of the white corpuscles, as in the conditions described as adenia, scrofulosis, Hodgkin's disease, pseudo-leukæmia, etc. There is also a form of anæmia, which has been designated as progressive or pernicious, which pursues a similar course, to a fatal termination, in which there is neither an increase of the white corpuscles nor any glandular enlargement. The appetite remains good, and an abundance of food is taken to the last, and in which all the cachectic symptoms noted as occurring in leukæmia, and other morbid conditions due to mal-nutrition, occur, viz., dropsical accumulations, diarrhœa, fever and sweats, hemorrhages, etc. I have observed one such case.

As to the treatment of leukæmia little can be said other than that a great variety of therapeutical remedies have been tried without avail. Tonics may aid in keeping up the appetite if it fails. Iodine or some of its preparations has had the effect of reducing the glandular enlargements in some cases; and, according to Da Costa, the hypodermic use of ergotine has caused a marked reduction in the size of the spleen. Niemeyer mentions a case in which hydropathic treatment proved of temporary benefit. In other words, the treatment is simply palliative.

ART. XIX.—*Case of Traumatic Aneurism, at the Bend of the Arm, cured by Flexion.* By H. F. MONTGOMERY, M.D., one of the Attending Surgeons at Rochester City Hospital, N. Y.

THIS case is reported, not for its originality, but to place on record another instance of a serious lesion successfully treated by a simple method.

Leopold S., aged 39 years, a native of Germany, was found near the brink of the Genessee Falls in this city, faint from loss of blood. He was taken to the police office, where it was discovered that a wound at the front of the elbow-joint of the left arm had been inflicted, not by an assassin as he first stated, but by himself, with a pocket knife, for the purpose of suicide. He was taken to the City Hospital at 5 o'clock A. M. on the 29th of October, 1874. The wound was dressed by the first clinical assistant resident at the hospital, and is described by him as follows: "Upon examination a transverse incision was found in the left forearm about three-fourths of an inch in length (depth not ascertained), immediately outside of the tendon of the biceps. Wound was dressed by putting in one suture and applying adhesive straps." The bleeding had ceased when the wound was first seen at the hospital. The patient was placed in bed.

The next day bleeding from the wound suddenly commenced with a rapid and large stream. Dr. David Little (Surgeon of 13th N. Y. V. Regiment in the late war), now one of the attending physicians in the medical wards of City Hospital, fortunately being in the house, was called into the surgical ward, and applied a compress and bandage, and directed them to send for the attending surgeon to ligate the bleeding vessel. When I arrived the bleeding was arrested, and pulsation at the wrist was felt. Therefore, in accordance with a generally accepted rule of surgery, I did not search for the wounded vessel. The dressings were not disturbed. There was no further hemorrhage after this.

November 15. I removed the dressings from this arm and found a granulating wound, and a tumour immediately below the wound, in the central line of the forearm, the size of an almond kernel, pulsating strongly, and with a decided thrill. Three methods of relief suggested themselves: 1st, to tie the brachial artery above the elbow; 2d, to cut open the sac of the aneurism, and to tie above and below the wound in the artery; or 3d, to pursue a plan, recently found successful, of treating traumatic aneurism in the same manner as in true aneurism, by compression and by gradual obliteration of the injured artery.

The first would endanger sloughing; the second would also, but in a less degree; the third had this advantage, that if it did not succeed the collateral circulation would be enlarged, and would diminish the danger of mortification should it become necessary eventually to tie the brachial artery. A firm compress was placed upon the brachial artery, and a bandage applied, from the fingers to and above the elbow, around the compress.

16th. The patient complained of the pain of the compress, which was removed and the following was substituted, after the exuberant granulation of the wound had been cauterized with nitrate of silver and covered with a small portion of lint. A bandage was applied to the hand and forearm, the hand supinated, and the forearm flexed upon the arm to its greatest extent, and held there by several turns of adhesive plaster around the

forearm and arm (first having placed along the back of the arm a portion of binder's board to divide the pressure of the adhesive plaster over a large surface). The immediate effect was to arrest the circulation through the artery at the elbow, as was evidenced by a failure to feel the pulsation at the wrist of the radial artery. After one week the dressing was removed, and the pulsation and tumour were both still obvious. The same dressing was reapplied, except that one turn of the bandage, around the arm and forearm, was carried above the joint and around the arm, and as often as the adhesive plaster stretched it was removed and tightened, so as to *keep the flexion up to its greatest extent*. The patient made but little complaint of the dressing, but was ordered a quarter of a grain of sulphate of morphia at night. On the 29th of November the dressing was again removed, the tumour and pulsation were both absent, but in place of them was a non-pulsating, hard, solid substance between the cicatrix and the joint, about the size of a large pea, just outside of the tendon of the biceps and near its insertion. The dressing was again applied, and continued to the 3d of December, when it was discontinued.

January 17. There is no appearance of the tumour, the wound is healed, and the pulsation at the wrist is feeble. The fingers are somewhat stiff.

From the history of this case, and by experiment, it is obvious that in most persons extreme flexion of the forearm upon the arm arrests the circulation through the brachial artery at the bend of the arm, *when the forearm and arm are bandaged*.

ART. XX.—*Case of Accidental Elytrorrhaphy.* By JAMES BORDLEY, M.D., of Centreville, Queen Anne County, Maryland.

THE subject of the following case of prolapsus uteri was a lady æt. about 47; the initiatory symptoms of which were developed during the irregularities attendant upon the "dodging time," and accompanying that act throughout, passing through the successive stages of prolapsus during the "climacteria."

From the frequent and almost constant state of engorgement and congestion present during that period, the uterus became much enlarged and very heavy; and as I was not permitted to use proper means during the time for its amelioration and relief, the natural result from the long inversion of the vagina and stretching of the uterine ligaments involved in its descent, was procidentia. When the patient saw that her case had grown so much worse, and when she found herself unable to stand upon her feet from the descent of the womb, and its consequent results, such as dragging upon the bladder, rectum, etc., and by its protrusion between the labia, producing such discomfort and impeding locomotion, she then, and not until then, gave her assent to the use of whatever instruments or means I might see fit to employ.

Then, as had been anticipated, I found great difficulty in procuring an instrument capable of holding the heavy organ *in situ*. Besides the unnatural weight of the womb, its great enlargement had so distended the vagina that it afforded no support or assistance to any pessary introduced, and as my object was to restore the parts to their normal state, that the treatment might result in complete cure as well as immediate relief of present symptoms, I was averse to use a pessary for that purpose

of such size as to keep the vaginal tissues constantly on the stretch. So I tried without success many different instruments; the weight of the uterus being so great, that the moment the support was removed they were expelled from the vagina.

Among those used I will mention, Meigs' rings (smaller size), Thomas' modification of Cutter's, and Thomas' retroversion pessaries, the two last named being held in high esteem by Thomas for such cases. No instruments requiring external supports were tried, for the reason that she objected to their frequent introduction, particularly as she would have been compelled to apply them herself.

At last, determining to use my own mechanical skill, in an endeavour to contrive some device to suit the emergency, I introduced a Meigs' ring four inches in diameter, for the purpose of affording her temporary relief, or until I could find some pessary more likely to fulfil the indications, although, as I said above, it had of all other instruments the most objectionable features, viz., those of keeping the vagina in a constant state of distension, thus acting as a palliative and not curative, for while it sustained the prolapsed organ temporarily, it prevented the contraction of the vagina, thus rendering it incapable of returning to its normal state, and the performance of its important function.

After its introduction, so perfect and complete was its action in holding the womb in its proper position, and thereby affording the patient for the time such comfort, that she not only expressed her entire satisfaction at its success, after such repeated failures, but pertinaciously refused to have it removed, and I found it impossible to impress her with the fact of its incompleteness, although repeatedly warned of the ultimate result of such treatment; and although she was so frequently cautioned against the danger likely to result from its unceasing pressure upon, and distension of, the vaginal walls, she still resisted all my efforts to remove it.

She very soon after passed from my notice, and having nothing bearing upon the case to keep it in mind, it altogether escaped me.

Some six or eight months subsequently, being summoned, I found her in great pain, and upon inquiry found that she had been suffering for some time with all the symptoms of well-marked vaginitis. Upon an exploration, I found the vagina hot and inflamed, but the pessary nowhere to be discovered, but upon a more careful examination I found it imbedded as it were in the mucous membrane, completely enveloped by the mucous folds.

So relaxed was the mucous membrane when the ring was first introduced, that although it greatly distended the vaginal walls the ringæ were still left very distinct, and as a consequence of the constant and unceasing distension kept up by the instrument, and from increased loss of tone, they became relaxed to a still greater degree, until the projecting folds completely encircled the pessary, the opposing mucous surfaces thus being in immediate contact.

When from the constant pressure upon so vascular a tissue as the vaginal mucous membrane, irritation was succeeded by inflammation; adhesion between the opposing surfaces took place, thus encompassing the instrument in its whole extent in its meshes. Here was a double source of uneasiness, for I then felt that perhaps I had been guilty of malpractice in not forcing her to have it removed, and for allowing it to escape my mind, and then in the extremely engorged state of the mucous membrane I was fearful that in removing the pessary, troublesome hemorrhage might

follow the operation. But after some consideration I concluded to remove it at once, as delay could only breed danger, and as I had determined, for the purpose of causing as little hemorrhage as possible, that I would attempt to divide the folds at their points of union with my finger, or some non-cutting instrument. I had some difficulty in accomplishing the result, as I found the tissues very firm and unyielding, but the operation, although somewhat prolonged by this mode of procedure, was successful beyond expectation.

I first introduced Sims' speculum, and finding a point where the bond of union was the least complete, I made an opening with a sharp-pointed bistoury down upon the ring, sufficiently large to admit the introduction of a pair of long and delicate forceps, and with these I grasped the pessary, and with the index finger of the right hand forcibly divided the membrane, while at the same time by using gentle traction with the forceps, succeeded at length, after much pain to my patient, in removing the instrument, and much to my own satisfaction no considerable amount of hemorrhage followed.

She was then directed to remain as quiet as possible, in the recumbent posture, and in case of hemorrhage to use ice-cold injections, and if necessary the tampon, until I could see her again. The case progressed favourably, the inflammation and swelling speedily subsided, and the parts healed well, but slowly.

The result of this accident was, that, in healing, the mucous with the submucous tissues, at the points of laceration, so contracted that there remains *now* a cicatricial band or ring entirely encircling the vagina, said band performing fully the office of a pessary, and that so perfectly, that since the recovery of the patient (now nearly a year) she goes about as usual, and experiences no discomfort or inconvenience from a procident uterus.

There are of course two other factors to be considered in this case that are entitled to credit in its cure: first, the diminished weight of the womb, and second, the shortening of the uterine ligaments during the time the organ was supported by the ring, but they occupy altogether a subordinate position when considering the *completeness* of the result, thereby detracting nothing from the truly important function performed by this natural living pessary, this spontaneous elytrorrhaphy (if I may be permitted so to style it). It is conceded by all that the part performed by the vagina in sustaining the womb is the most important of all its supports, the others being auxiliaries.

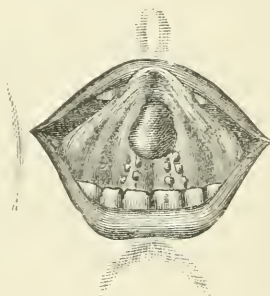
I am aware that it may be said, and perhaps justly, that the cure is not yet complete, for it may not stand the test of time, but to that I can only answer that it has performed its part now for nearly a year, thus comparing favourably with the majority of true elytrorrhaphy operations, most of which up to this time have proved useless in less time than the one under consideration.

My apology for relating the history of this case must be twofold: first, on account of its novelty, and second, that I might offer it as a warning to others in the use of such instruments when not wholly within or under the control of the operator; for it is certain that all such cases will not end so propitiously for either patient or physician.

ART. XXI.—*Two Cases of Polypus: one of the Tongue, the other of the Uvula.* By SAMUEL C. BUSEY, M.D., one of the Physicians of the Children's Hospital, and Physician in Charge of Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C. (With a wood-cut.)

CASE I.—(Notes by Dr. Bittinger, assistant) 1873, Oct. 2d, K. C., white, aged 13, presented herself at the Columbia Hospital Dispensary. On the under surface of the tongue, about midway of the raphé and springing from it, was an elongated polypoid looking growth, measuring one-half inch from base to apex. It had been first discovered six months previously, but had grown much faster during the two months immediately preceding this date. It was tender to the touch, very sensitive, and occasioned much annoyance. The edges of her teeth were perfectly smooth. The accompanying cut exhibits the growth very distinctly. (From a drawing by Mr. Grebel, medical student.)

On both sides of the raphé, extending backwards from the base of the polyp, were two rows of vesicles, each vesicle larger than a pin's head, and between the rows of vesicles on each side a small vein was distinctly seen. Removed the growth with scissors and cauterized the basal surface with a saturated solution of chromic acid. The bleeding was very slight.



The following description of its microscopic character is by Dr. E. M. Schaeffer.

Microscopical section 6118, Army Medical Museum, "polypus from tongue" This specimen presents a section of the small growth from which it was taken, cut at a right angle to its longer diameter, and is nearly circular in shape. It is tinted with carmine to demonstrate the nuclei of the cells, and mounted in Canada balsam.

On examination with a power of 100 diameters it presents the appearance of a papilloma of the mucous membrane, of which the main portion is formed by a hyperplasia of the connective tissue, differing in this respect from the mucoid polypi in which the principal mass is formed by hypertrophy of the gland elements.

The circumference of the section is formed by a thin wall of nearly normal epithelium of the kind peculiar to the oral cavity, flattened in its outer layers, roundish, and columnar in the innermost layers, where it is encroached upon by small papillæ, which present no hypertrophy, and do not run very far into the epithelial stratum. The area of tissue inclosed in this epithelial ring, constituting the remainder of the section, is composed of a stroma of connective tissue, infiltrated in every quarter by the small, round, nucleated cells, which, resulting from "proliferation" or "exudation" according as one or the other theory of their formation is adopted, are common to all actively growing connective tissue; as well that found under normal conditions as that undergoing inflammation in the immediate vicinity of cancerous growths.

These cells, sparsely scattered near the epithelial boundary, grouped in swarms in the interior of the section, especially in the neighbourhood of blood-

vessels, are also seen in some places actually penetrating the dense stratum of epithelium, as is not uncommonly seen in growths of this kind, as well as in epithelioma, etc.

The appearances thus far are quite compatible with simple hypertrophy, but there are seen near the centre of the section two small yellowish masses of cells, one of a somewhat regular oval outline, the other quite irregular in contour, and examining these with a power of 400 diameters, they are found to consist of nearly oval cells, flattened in one diameter, three or four times the diameter of the small cells pervading the tissue elsewhere.

They each contain a single nucleus, and resemble epithelial cells in appearance, strongly reminding one of the cells found in epithelioma, in parts when they have not yet by mutual pressure assumed the thin scaly character usual in the denser parts of the growth. In the absence of any definite concentric arrangement of these cells, or of any approach to the "cancer-cylinder" found in fully developed epithelioma, it is not possible to decide with certainty as to their true character and significance, but they are of interest in view of the observations of modern pathologists tending to prove a transition of the mucous papilloma into epithelioma. Rindfleisch also mentions the fact that the mucous membrane over a cancer developing in the submucosa has frequently been observed to be disposed to papillary proliferation.

This specimen differs from most others of the same character found in a similar locality in having a nearly unaltered epithelial covering, the hypertrophy not extending beyond the connective tissue, composing its greatest bulk.

The growth was quite vascular, as shown by numerous sections of small arteries and veins, principally near its centre.

1874, *January 12*. K. C. again presented herself at the Dispensary. She says she continued well until November, 1873, when the growth began to return, and has grown very rapidly during the past few weeks. It is now larger than when removed in October last. I again removed it with scissors, and cauterized the surface with a saturated solution of chromic acid.

19th. Surface entirely healed. The vesicles, before referred to, enlarged and projecting irregularly.

February 9. Polypus reappearing, now about the size of a pea; semi-translucent. Discharged its semi-fluid gelatinous contents and renewed the application of chromic acid. On the 16th she was again well, and nothing marked the locality of the former growth.

April 13. The growth has again returned; now globular and semi-translucent. Applied a silk ligature which, together with the growth, came away on the 15th, leaving a small superficial ulcer. Touched the ulcer with lunar caustic. On April 20th it had healed, but the cicatrix was distinct.

July 2. She again presented herself. The polyp was larger than at any previous time. Injected it with 15 minims of pure acetic acid. It turned black in 15 minutes, and sloughed off in 36 hours, leaving a slightly projecting base, very tender and vascular. On July 13th the surface had entirely healed, but still very slightly projecting, and on the 30th the point of attachment could only be recognized by a slight sensation of hardness, feeling somewhat like a very small shot under the epithelium. It has not recurred, and the vesicles along the border of the raphé have disappeared, *January 14th, 1875*.

A case, analogous in character, and frequently recurring, though the growth was "situated at the junction of the hard and soft palate, a little to the left of the median line," is reported by Dr. Méplain, of Moulins, in the *Bull. Gén. de Thérap.*, t. lxxxv. p. 347, and a synopsis of it is to be found

in the *Med. News and Library*, vol. xxxii. p. 155. Dr. M. failed with chromic acid, removed it with scissors, and applied perchloride of iron to the surface, next tore it away with dressing forceps, and a fourth time tried carbolic acid. It failing, he again removed the growth with scissors, and once more it returned in the course of a week. Finally, he injected it with one minim of acetic acid. It gradually wasted away and did not return.

I injected with an ordinary hypodermic syringe, on 2d of July, fifteen minims of the acid, having previously read the synopsis of Dr. M.'s case. There was but a momentary pang, and discoloration commenced.

CASE II. *Polypus of the Uvula*—On the 29th of December, 1874, I removed from the posterior surface of the uvula a small polypoid growth. It was attached near the base of the uvula by a very small thread-like peduncle. The youth, 15 years of age, had been troubled with a slight cough for many months, perhaps a year, for which no satisfactory cause could be discovered. Having failed to discover the cause of the cough, which had resisted every remedial resource, I was inspecting, with unusual care, the pharynx, and, while doing so, directed the patient to expire through the mouth with force. This act brought to view what, I supposed at the time, was a transverse bifurcation of the uvula. Subsequently, I recognized the thread-like peduncle, which seemed to spring from the posterior surface near the base of the uvula. The growth always separated from the uvula towards the left side. It was removed without difficulty. The patient, with mouth widely opened, was directed to expire with force, when the body separated towards the left and for a moment caught and adhered to the half arch. With a pair of scissors the peduncle was clipped as near the base of the uvula as possible. But a drop of blood escaped.

1875, February 15. The cough ceased, and has not recurred.

ART. XXII.—*A New Method of Applying Medicines to the Uterine Canal and Cavity.* By E. P. SALE, M.D., of Aberdeen, Miss.

SOME time since, having broken a Clay's Insufflator with which I had been applying medicines in substance to the uterus, I desired to effect the same object with other means, and the mode suggested itself of doing so by using gelatine capsules as a vehicle for the medicine and allowing the capsule to dissolve in the uterine canal or cavity. The method has been quite satisfactory, not only in the instance alluded to, but in several others, and also in the hands of other physicians to whom the process has been mentioned.

As it requires some care in manipulation, I may as well describe the *modus operandi*, which is as follows, viz.: The patient being in the recumbent position, the speculum introduced, the uterine canal having been previously dilated (if it is not already morbidly so), and cleansed by wiping

it out with cotton-wool or by irrigation ; the capsule to be used is introduced either below or above the *os internum* by means of small uterine forceps ; the patient retains her position for half an hour for the capsule to dissolve, or, if circumstances prevent her being quiet, the uterine mouth can be plugged with cotton to retain the capsule, or for the same purpose a pledget of oiled cotton with a string attached can be stuffed high up in the vagina which can be removed by the patient by means of the string which has been left pendent.

The capsules used are the elongated No. 1 of Messrs. Plantin & Son. By this method nearly all medicines embraced in gynecological therapeutics can be applied ; such as *nit. silver*, *sulph. copper*, *sulph. zinc*, *pernit.* or *persulph. of iron*, *iodide of starch*, *chromic acid*, etc. All of these can be mitigated to suit the peculiar case by innocuous agents, as *nit. pot.*, *pulv. acaciæ*, *pulv. glycerrhizæ*, *lycopodium*, and *starch*.

ART. XXIII.—*Albuminuria as a Symptom of the Epileptic Paroxysm.*

By Wm. H. DEWITT, M.D., Assistant Physician to the Longview Asylum for the Insane, Hamilton County, Ohio.

By a carefully conducted examination of the urine passed by some twenty odd patients suffering from epilepsy, I have detected in each specimen the presence of albumen. The quantity present in each instance was modified very much by the character of the attack. In those cases where the attack was severe and prolonged, the quantity of albumen present was quite large, amounting in some instances to an abundant deposit. In those cases where the attack was of a mild, transitory nature, the quantity present was exceedingly small ; in no instance, however, was there an entire absence of albumen.

The quantity too was modified very much by the time intervening between the paroxysm and the act of passing the urine. The urine passed soon after a paroxysm contained a *much larger* proportion than that passed at a more remote period ; traces, however, could be detected for hours after a paroxysm. The sp. gr. ranged from 1010 to 1022.

I desire to call particular attention to the fact that one specimen contained a small quantity of blood ; its presence by close observation could be discerned with the naked eye ; by the aid of the microscope its presence was readily distinguishable ; it seemed to be intimately incorporated with the urine, and I have no doubt came from one or both kidneys. This appears to me to be of special interest, from the fact that the possibility of the presence of blood in the urine of epileptics, passed after a paroxysm, has been strenuously denied.

[These observations are confirmatory of those published by Max Huppert in Virchow's *Archiv*. See *Monthly Abstract of Med. Science*, Sept. 1874, page 108.]

REVIEWS.

ART. XXIV.—*Lehrbuch der Krankheiten der Weiblichen Sexual-Organ.* Von Dr. F. W. SCANZONI, Königl. Bayr. Geheimen Rath und Professor der Medecin an der Universität zu Würzburg. Fünfte umgearbeitete Auflage. pp. 829. Wien, 1875.

Text-book of the Diseases of the Female Sexual Organs. By Dr. F. W. SCANZONI. Fifth improved edition. Vienna, 1875.

THE fact that a translation of this work has been made and published in this country, and is doubtless in the hands of many of our readers, may seem to obviate the necessity of anything more than a mere notice of its continuance. Yet medical science is advancing, and no department of it more rapidly than gynecology. It is eighteen years since the first edition appeared, and as the duty then devolved upon us of introducing it to the profession here, a natural interest impels us to examine the present and note what changes it has undergone since then. That it has been increased in bulk by the addition of about two hundred and fifty pages, that its success at home is marked by reaching the fifth edition, these are matters of small moment. It is far more interesting and important to note what changes of doctrine there may be in its pages. At the time of its first appearance the author was in high repute and high position; the years since then have only added to his reputation, and he is now quoted as an authority in obstetrics and gynecology wherever medical science is cultivated. His matured opinions upon some of the important and still unsettled points of practice in this department cannot, therefore, but prove of interest to students and practitioners everywhere.

There are two most excellent characteristics of a medical work well marked in this book. The first is that the author has very decided opinions of his own; the second, that these opinions have been formed from his own clinical observations and study. If the first leads, in some instances, to more prolixity than necessary, and if his replies to some of his critics render some few portions polemical in character, these blemishes are amply atoned for by the plain statement of his convictions and the firm basis upon which his doctrines rest. It is not maintained, of course, that his opinions and doctrines are necessarily correct, but there can be no mistake as to the honesty of such a writer, while his opportunities for observation have been ample. His experience has led him, as we shall see, to differ in regard to some very important points in gynecological practice, and in our notice of the work we shall rather attempt to state his opinions than to criticize them, to give the results of his experience than to weigh the evidence for or against doctrines not in accord with authorities in our own language.

A perusal of the preface of the present edition shows us the author's opinion of extreme doctrines, his position as to various "schools" of gynecology, and leads us to infer that such exist to a greater degree in Germany than here. He leaves no doubt as to his views even in the

opening paragraph, declaring that his introduction is not so much to state the appearance of a new and improved edition as to give his professional brethren to understand that "the highly praised so-called 'revolution' in gynæcological practice has not caused him to give up the original plan of his book and to re-cast it in accordance with the views of some modern prominent American and English gynæcologists."

"A gynæcological practice of almost thirty years," he continues, "has forced upon me the conviction that the device of the modern school: 'local disease, material explanation, and mechanical treatment,' as a general proposition, leads astray, since it produces skilful routinists, but not physicians, who, if their treatment is to be a successful one, must keep constantly in view the connection of the local disease with more or less distant physiological actions and pathological processes."

He appeals with confidence to those familiar with his former writings to bear witness that injustice has been done him when he is reproached with under-estimating the value of operative procedures in gynæcology.

"I know only too well that there are a not inconsiderable number of diseases of the female sexual organs which defy all medical treatment, and which offer only to the surgeon an advantageous field; I am also far from being afraid of the knife; but I challenge a practice which conducts operations without a foundation based upon anatomical, physiological, and pathologico-anatomical facts: operations which are partly useless, partly dispensable, and partly, finally, so circumstanced, that the gain of them is heavily over-weighted by the dangers attached to them."

"While I have always voluntarily recognized, as I now recognize, the true worth of the operative part of gynæcology, I oppose in the most strenuous manner, the extravagances which in modern times have sought to establish themselves, and which, alas! are only too well adapted to lead the young and less experienced physician astray, and force views upon him of whose dangerous tendencies he only first becomes conscious after he has learned, by more or less sorrowful experiences in his own practice, that not every doctrine which rejoices in a glittering raiment is really gold."

Passing to the body of the work, we cannot avoid quoting from the general observations upon the symptoms caused by uterine disease the following very positive testimony as to the necessity of a careful study of disease of the sexual organs of women on the part of the general practitioner. It is to be hoped that the necessity for such a quotation will not much longer exist, but that it does still we know from observation and from the statement of all writers upon the subject.

"The most varied alienations of the mental powers, the most surprising anæsthesia and hyperæsthesia of limited portions of the body, the most obstinate neuralgias, and numerous spasmodic and paralytic affections of certain groups of muscles have, if not always, yet by no means seldom, their sole origin in the presence of uterine disease, and can only be ameliorated or entirely cured by the curing of this."

In regard to the examination of patients, he still as formerly places the highest estimate upon the value of the touch, which is to be learned only by practice at the bedside, and does not hesitate to say that he who is not thoroughly versed in this procedure is not fitted for practice. He advises the touch *per rectum*, to correct or sustain the information derived from the other. In regard to the value of Simons' method of introducing the hand he does not commit himself, but does not seem favourably disposed toward it. As to the speculum, he regrets that its use is not more general among practitioners in his country. To use it, he places the patient on the back

with the pelvis elevated, and of the different kinds, prefers Fergusson's silvered glass instrument. In the first edition it was stated that it could not be obtained in Germany, except at a very high price; this objection is now removed, and, although he admits that cases do occur in which the polybladed instruments are better, the cases in which they afford greater advantages "belong to the rarities." Upon this point he is quite strong in his expressions, and bases his advice upon what he has learned from actual experience with such instruments as those of Charrière and Cusco. In regard to Sims' speculum, he considers its adaptation to general use and decides adversely to it, while commending it for certain cases and manifest advantages in some respects.

The author is no great friend to the uterine sound. His views have not changed in regard to the needlessness of resorting to this instrument upon every occasion, and the frequency with which serious mischief is occasioned by it. He has learned the advantages of, and adopted, the flexible instrument of silver or copper, and in this respect is in advance of some European gynæcologists.

He advises the use of sponge-tents for dilatation of the uterus, but bears testimony to the dangers which sometimes result from their use, for which reason he much preferred those of laminaria until, as he says, he learned from Sims a mode of using them which was free from danger. The value of metallic dilators, for non-puerperal cases, he does not estimate very highly.

The chapter upon general therapeutics opens with the admission of the necessity for local application, in the treatment of uterine diseases, with the expression of the fear, however, that we have gone too far in that direction, over-estimating their value and neglecting general measures. In local depletion, he decidedly prefers leeching the uterus, a process which he shows to be anything but of recent origin, and uses scarification only when the patient is decidedly anæmic, or when but a slight effect is desired. For caustic applications he uses nitrate of silver, solid or in solution, tincture of iodine, and sometimes the nitrate of mercury. He is averse to the employment of Vienna paste and caustic potash, and we find no mention of the use of fuming nitric acid either to the cervix or cavity of the uterus. He advises the actual cautery, but only for carcinomatous ulcers or such as have obstinately resisted other treatment, and still, as formerly, advises its secret employment, the patient being under chloroform, and not told of what is to be done, for fear of terrifying her. Melted sealing-wax is again recommended as an application to ulcers of the cervix. We have never heard of the author being followed in this particular practice.

For intra-uterine canterization, he uses the nitrate of silver in a caustic holder, and we find no mention of by far the most convenient and safest means of application, that by Lente's coated probe. He is very favourable to the use of intra-uterine injections, and urges at some length their innocuousness, his principal arguments being his own experience, and a long series of experiments which he instituted, and by which he was convinced that fluids could not be forced into the abdominal cavity through the Fallopian tubes except by a force which would never be used on the living subject. He explains the occurrence of many of the attacks of peritonitis following this procedure, by extension to that membrane of an endometritis set up by the irritating fluid. Nevertheless he counsels dilatation of the cervix always that there may be free exit for the injected fluid.

"In no case in which this has been done, have we seen arise those violent pains which in former times, when we neglected this measure, came so frequently under our observation, that we made use of a therapeutical resource, with a certain dread and only in the most pressing cases, the great value of which, in the treatment of profuse long-continued uterine catarrh and certain kinds of hemorrhage, has always been recognized by us."

Various medicines in the form of unguents are advised, but for application to the vagina only. The special application of chloroform vapour is still highly recommended, especially for uterine colic, and an apparatus figured for its application.

The consideration of the use of vaginal injections occupies several pages. The temperature of the fluid used, and the force with which it is thrown in, are important elements in the use of this measure, warmth being one of the most important means to promote the liquefaction and absorption of plastic exudations, and those in the uterine parenchyma or around the organ rapidly disappear under the use of the hot douche. The local use of hot water as a means of allaying pelvic inflammations and promoting the absorption of pelvic exudations, has recently been announced as a new thing and a purely American discovery. Candor compels us to state that this doctrine is plainly taught here, just as it was in the first edition of the work. The effects of this remedy are said to be decidedly increased when the stream is thrown with considerable force, mechanical irritation supplementing the effect of temperature, an irritation which, on the other hand, should be avoided when cold injections are used for checking hemorrhage.

The author's views in regard to the pathology of that condition generally termed "chronic metritis," are probably well known. He is one of the prominent members of the "German school," which has led the way in promulgating correct views as to the real state of affairs in this affection. It is no longer an inflammation, or an hypertrophy, or an "engorgement," but an increase of the connective tissue of the organ, a "hyperplasia," and although he still heads the chapter "chronic parenchymatous inflammation," he teaches, as heretofore, that the term inflammation is a misnomer. He traces at some length the progress of the disease through the two stages, which are well marked, of infiltration and induration, and admits an increase of the muscular tissue of the organ, although not to the extent of the connective tissue.

"From all of which it results that the term chronic metritis does not really belong to all the cases to which it has been applied, that many, even perhaps most of the enlarged uteri characterized as inflammatory have nothing of an inflammatory nature in the correct sense of the word; they are changed conditions of nutrition, such as we see arise in other organs as the result of prolonged hyperæmia."

As the name indicates, the disease is essentially a chronic one, and its obstinate resistance to remedies is fully recognized by the author. When it is of long standing, a perfect cure, he says, is scarcely to be expected, and a perfect return to undisturbed health has not, in a single instance, fallen under his observation.

For the treatment of those cases in which the shorter duration of the disease, or the age of the patient, allows of hope for cure, and for the amelioration of all others, his principal remedies are local depletion and the application of warmth, while he lays stress upon the value of mild cathartics frequently repeated. He recommends the local application of iodine and

iodide of potassium, with glycerine to the cervix, but has no faith whatever in the value of the internal administration of these remedies, having never been able to discover any change in the affected organ after long continued use of them. He has not tried vesication of the cervix, and is not favourable to the use of either caustic potash, Vienna paste, or the actual cautery. In cases having more the character of passive congestion the astringents come into use. He has used, of late years, subcutaneous injections of ergot, and has seen excellent results from this remedy.

There is one point in connection with this form of disease of the uterus, which is of the utmost importance: it is the differential diagnosis between it and malignant disease. The author freely admits the impossibility of distinguishing the graver affection, in its early stages, from the more benign.

... "We will openly acknowledge that no perfectly reliable diagnostic sign is known to us. The age of the patient deserves consideration, the possibly to be discovered cause of the ailment, also its former course and its apparent influence upon the general organism. If, on some sides, the unusual hardness of the vaginal portion and the lower segment of the body is recognized as a tolerably reliable criterion of cancerous infiltration, we cannot assent to this view, because this condition has occurred to us in several cases in which the disease proved by its further course to be undoubtedly a simple induration. The size and form of the enlarged cervix, its smooth or uneven surface, the movability or immovability of the uterus, the kind and position of the pain, the character of the bloody and mucous discharges from the vagina—in short, all the various differential signs and symptoms of the older and later writers as to the benign or malignant character of enlargements of the uterus—have, in and of themselves, no high diagnostic value. They may, taken all together, and with careful consideration of all the peculiarities of the particular case, give foundation to a greater or less probability in one or the other direction, but long observation of the objective changes in the cervix can alone give full security."

Turning to the chapter upon cancer of the uterus, we find that the author enters very fully into the consideration of diagnosis, devoting about twelve pages to the subject, much of this space being occupied with a full commentary upon Becquerel's parallel tables of symptoms. We find here the same candid confession of inability to make a differential diagnosis between chronic areolar hyperplasia, and malignant disease. Indeed, in speaking of the mode of origin of the 108 cases which occurred under his observation, he says that "in 18 we treated a uterine affection, which we held to be nothing else than a chronic metritis, part with and part without ulceration."

"A reliable judgment as to the cancerous nature of a non-ulcerated enlargement of the neck of the uterus can only be rendered either by anatomical investigation, or, chemically, by long observation of the course and particularly of the beginning of the well-known metamorphoses of cancerous tumours." ... "We openly confess that we have been very often tempted to believe enlargements and indurations of the cervix to be cancerous, yes, even that we have repeatedly declared such a diagnosis to the friends of the patient, without our opinion having found its indorsement in the further course of the disease."

"In the differential diagnosis of benign or malignant enlargement of the cervix, we lay great weight upon the condition of the mucous surface, whether it is intact or the seat of a more or less extensive papillary erosion or ulceration. Where this is lacking, be there present more or less of the above-mentioned symptoms given by Becquerel in favour of cancerous induration, we are always more inclined to look upon the enlargement as a simple hyperplasia."

Recently Spiegelberg has investigated the diagnosis of the early stage of carcinomatous disease, and has laid stress upon three points upon which to base a decision : 1. The much more considerable hardness and resistance of the cancerous deposit in comparison with the consistence of hyperplasia. 2. The immovability and close union of the mucous membrane covering a cancerous degeneration, which is not the case in hyperplastic enlargement and induration. 3. The fact that while the latter, under the pressure of a sponge-tent, dilates and becomes softer and more spongy, the carcinomatous cervix remains hard, unchanged in consistence, and undilated. Each of these points receives attention. The first two are declared unreliable from the author's personal observation and experience. In regard to the third, which not long since went the rounds of our medical journals, he says :—

“In regard to the effects of the sponge-tents upon the cervix indurated from malignant deposit, we have no personal experience, and it appears from Spiegelberg's interesting investigations that he had really only twice the opportunity of practically testing his theoretical view by a microscopical examination. The confirmation or refutation of the same must therefore be referred to the future. In the mean time we cannot avoid remarking that Spiegelberg himself confesses that by the action of the tent the destruction of the neoplasm, the ulceration of the cancer, is hastened, whereby, as is readily understood, great doubt is thrown on the reliability of this measure as a simple means of diagnosis ; and as he also says that no injury is done thereby, because extirpation should immediately follow, it is certainly proper to ask whether, by this injurious effect of the tent, the results of the operation may not be affected.”

While upon the subject of cancer of the uterus, we cannot avoid noticing one point in the etiology. The author expresses the conviction that venereal excess is one of the causes of this disease. Of the 108 cases observed by him, 15 had suffered, upon their own or their husband's testimony, from a sexual desire beyond possibility of satisfaction. That prostitutes comparatively seldom suffer from the disease (there were only three among his cases), he explains by saying that, with them, coition is not generally accompanied by much feeling, and it is not frequent intercourse alone which causes the disease, but extraordinary excitement and sexual pleasure. To this view we are not prepared to assent. We would not for a moment think of placing our experience against his, and our opinion may be of little value, but from several cases which have fallen under our observation, in which unusual sexual appetite has been prominent, we have been led to place this in the symptomatology, rather than the etiology of the disease ; in other words, we think the abnormal sexual desire a result of the pathological process rather than the cause of it. Our opinion is based upon the fact that the unusual sexual appetite appeared but a comparatively short time previous to the presence of the disease being ascertained, and had not been a characteristic of the earlier periods of life.

In the chapter on dysmenorrhœa we find considerable space devoted to the consideration of division of the cervix, an operation to which he is not at all partial, as may be supposed from the tenor of his preface. He animadverts on the frequency with which Sims resorts to it, and also expresses doubts of it being ever necessary.

“To the honour of German science we can say that such kind of extravagances do not find so easy an adoption here as in England and America, where, besides, some of the most renowned surgeons and gynecologists have arrayed themselves in opposition to a procedure to which, in some rare cases,

a certain justification cannot be denied; but the abuse of which marks rather a retrograde movement than an advance of our department."

In the first edition of this work the subject of inflammation of the structures in the neighbourhood of the uterus was disposed of within two pages; now it occupies twenty-four, a space more in accordance with the great practical importance of the subject, and the change serving somewhat to mark the advance made in this direction. The author treats of pelvic cellulitis, pelvic peritonitis, and pelvic abscess in a single chapter, and without subdivisions. He declares it impossible to distinguish, in the early stages, a metritis or an oophoritis from an inflammation of the membrane surrounding the organs, but points out how the membranous may generally be distinguished from the cellular affection, laying great stress upon the time at which the exudation is to be discovered after the attack begins; if a tumour is to be felt in from twelve to twenty-four hours, the disease is phlegmonous in character. He expresses the conviction that these peritoneal and cellular inflammations are always secondary affections, depending upon some previously existing disease of the uterus, ovaries, or tubes, herein agreeing with Matthews Duncan, although he does not mention that author's name. He alludes to the far greater frequency of the exudations upon the left side, but without giving any statistics, and explains the fact by their puerperal origin, the greater frequency of the first position of the child, and consequent greater injury to the tissues on the left side of the pelvis. He calls especial attention to the frequent occurrence of a latent form of the disease—the true explanation of an unsatisfactory convalescence from labour—being only found weeks after the event by a physical exploration. And in the symptomatology of the disease the following is well worthy of remembrance:—

"It appears to us also deserving of mention, that the exudation, pressing upon the nerves passing through the cavity of the pelvis, not rarely causes disturbance of motor power, contractions, and paretic and paralytic symptoms in the lower extremities, the cause of which is not seldom sought for in altogether other directions, and, of course, cannot be recognized so long as a careful internal examination of the pelvic organs is omitted from the investigation."

He calls attention to liability of deception as to the point of opening of a pelvic abscess in the vagina, the examiner feeling certain that it will break out at a given point, when the pus all at once appears elsewhere.

"This apparent fluctuation perceived through the vaginal wall owes its origin not to the superficial location of the purulent collection, but to a serous saturation, an inflammatory œdema, of the vaginal wall and of the neighbouring capsular layer of the exudation, which gives to the finger an obscure sensation of fluctuation."

The author, except in special cases, allows the natural opening of pelvic abscesses.

The extremely chronic cause of some of the cases is described, and the importance of a knowledge of the fact to the physician duly impressed; he who is fully aware of it will stay his hand as to any operative interference with the pelvic organs so long as a trace of the affection remains, be it years after its origin, and guard his tongue as to prognosis, for the patient is always liable to a relapse which may have even a fatal termination. In those cases in which for a long time there had been no change, nothing apparently being left but hard tumour of connective tissue resulting from the exudation and producing symptoms only mechanically by

pressure on and dislocations of neighbouring organs, we have no guarantee of continued quiet.

"For, finally, it is not to be forgotten, that these apparently wholly solid tumours, not so very seldom have encapsulated within them larger or smaller collections of pus, whence it may happen that the contents of the tumour, after perhaps years of quietude, breaks a way out and so brings on all the dangers of a pelvic abscess."

Looking carefully through the section devoted to fibroids of the uterus, we find nothing worthy of especial notice. The author bears strong testimony to the value of Hildebrandt's hypodermic injection of ergot as a measure of treatment. When it comes to the operative treatment of these growths, a field in which of late so many brilliant advances have been made and especially in our own country, his conservative tendencies are so strongly expressed that we cannot forbear quoting, if only to show the contrast between his doctrines and those current with us. First as to the removal of these tumours by abdominal section. He credits Kœberle with resuscitating this "long-forgotten operation," and gives his results as five operations with three deaths; he then gives statistics as collected by Kœberle, 42 such operations with eight cures and 34 deaths, and mentions no other name in connection with the operation; and then says:—

"We, for our part, see in such foolhardy interferences no advance of surgery, and cherish the hope that the example of the French and English schools in this respect will never find imitators upon German soil."

Next, as to the extirpation of these tumours by the vagina, he says:—

"It appears only to be justified in the rarest cases; according to our opinion only when the growth is attached to the neck of the uterus, and projects freely into the vagina. We would not readily undertake the removal of submucous fibro-miomata projecting within the cavity of the uterus, as has been proposed by Amussat, Kiwisch, Hutchinson, Routh, Baker Brown, and others, although it was once done at our gynecological clinic by Dr. Schmidt with surprisingly good results, because we hold this operation to be not only extremely venturesome and dangerous, but because also we are acquainted with no means whereby we may learn beforehand the possibility of completing the undertaking."

It is not at all improbable that a future edition of the work may change all this, for, turning now to the subject of ovariectomy, we find the greatest possible change of opinion in regard to the operation from that expressed in the first edition.

"We hold the extirpation of ovarian tumours to be a surgical adventure, which, when it succeeds, must be thankfully glorified by the patient, and gaped at by the public."

These are the terms used in regard to ovariectomy only eighteen years ago! The author quotes this now and makes the *amende honorable*; the testimony of thoroughly reliable men, and the brilliant results obtained, have transformed him from a condemner to a defender of the operation. For the slow advance of ovariectomy in Germany, he pleads the influence of Simon's statistics, published in 1860, of all the operations performed up to that time, viz., 64, of which only 12 were really cured. He further pleads that an evil influence was exerted by the failures of rash, inexperienced, and unskilful men, who, deceived by the apparent ease of the operation in simple cases, attempted an undertaking which requires the highest qualities on the part of the operator, and that a portion of the ill-success arose from want of due attention, both to the various steps of the opera-

tion and to the after-treatment, which, on the part of German surgeons, were "in part unknown and in part neglected."

So far as ovariectomy itself is concerned there is little here to detain us. The author follows Kœberle closely as to the details, and is very brief, referring his readers for further particulars to the works of that author and to those of Spencer Wells and Baker Brown, acknowledging that he has not space for a subject the literature of which has so increased within ten years that it would alone fill a small library.

We looked with interest to the diagnosis of ovarian tumours upon microscopical evidence, hoping to find some testimony as to the presence or absence of an ovarian cell pathognomonic of the disease. The author follows Waldeyer closely in this branch of the subject, lays great stress upon the presence of paralbumin in the fluid, and as to cells looks upon those of cylindrical epithelial character as diagnostic, but gives no particular kind of cell as of importance.

Puncture of ovarian cysts through the vagina is well known to be a favourite operation of the author. In the present edition he has not modified his views as to the procedure, still thinking it the most preferable plan of procedure, both as to danger and as to probability of cure, but admits that the cases to which it is adapted are comparatively few. He still uses the same instruments and directs the same mode of operating as formerly. His statistics are as follows:—

"We have performed paracentesis through the roof of the vagina 23 times, and consider 14 of the cases to be entirely cured; in 5 refilling of the sac took place within a few weeks, 3 withdrew from our observation, and 1 died of typhus two months after the operation, and as no autopsy was permitted we can form no opinion as to the success in this case."

Limited as is the number of subjects we have touched upon, it is sufficient to afford an opportunity to judge of the author's style and the general tenor of his opinions upon some of the most important subjects connected with gynecology.

To the firmness of his convictions, to his undoubted honesty, and to the clinical basis upon which his opinions are founded, we have already alluded. Looking at the work as a whole, to its methodical arrangement, to its completeness as to the various branches of the subject, we find it excellent. Still, we cannot fail to note omissions which are not only numerous and important, but, for a writer occupying his position, surprising. Thus, with a general bibliography at the beginning of the volume, and a special one at the head of each chapter, we have no notice of so important a treatise as Raciborski's on menstruation, or of Matthews Duncan's on pelvic inflammations, or Atlee's on ovariectomy. There is no mention of what has been done in removing fibroid tumours of the uterus by Pean, or by Sims and others of this country, nor of the brilliant results obtained here in the reduction of long-standing cases of inverted uterus. Nothing is said of the diagnosis of simple cysts of the broad ligaments by physical examination of their contents, nor of the spontaneous coagulability of the fluid of fibro-cystic tumour of the uterus, a fact which is the more remarkable since his countryman, Spiegelberg, has called particular attention to it.¹ Far more important still, we have not succeeded in finding any notice of the aspirator, one of the most useful recent additions to our means of

¹ See Monthly Abstract of Medical Science, Jan. 1875; from Archiv für Gynæc.: vi. 3. 74.

diagnosis, if not of treatment. Finally, our examination of this work leads us to the same conclusion reached from a late personal visit to some of the chief celebrities of Europe, both men and institutions, that in all that relates to gynæcology and its practice, our own country will bear comparison with any other, either as to the extent to which the subject is cultivated by the profession generally, the text-books and treatises it has produced, or the substantial advances it has made in the subject.

J. C. R.

ART. XXV.—*Studies in the Facial Region.* By HARRISON ALLEN, M.D., Professor of Anatomy and Surgery in the Philadelphia Dental College. Illustrated with fifty-six wood-cuts. (Reprinted from "The Dental Cosmos.") 8vo. pp. 117. Philadelphia: J. B. Lippincott & Co., 1875.

A NEW work on regional anatomy in our own language is both rare and welcome, even though, as in the *Studies in the Facial Region*, only a limited portion of the body is brought under consideration. The lectures that form the basis of the work under review were delivered to dental students, yet its author has not confined himself to the parts with which alone practitioners of dentistry are supposed to deal, but has taken up all the regions of the face, viz., "*the region of expression, of the temple and angle of the lower jaw, of the ear, the upper and lower jaws, the nose, the mouth, the tongue, the naso-pharynx and palate, the speno-maxillary and supra-hyoid spaces.*" Each subdivision is made according to "relation of function," applying the physiological law that "areas supplied by branches of the same nerve are co-associated in function."

The anatomy of these various districts is given thoroughly and minutely (perhaps at times too minutely for the benefit of the majority of medical students). Some few changes in the nomenclature ordinarily employed have been made. Praying "that the time may soon come when we can sweep away such pedantic rubbish from anatomy," Dr. Allen would discard the old names *levator labii superioris* and *levator labii superioris alæque nasi*, and substitute Henle's name for the two, *quadratus labii superioris*, holding that "no conscientious teacher can permit himself to employ two names where one does as good service." This is certainly true enough, and it is equally true that the anatomical nomenclature is full of "pedantic rubbish;" but which name conveys to a student's mind the best and clearest idea of location and office, "*square muscle of the upper lip*" or "*elevator of the upper lip*" and "*of the upper lip and ala of the nose.*" In this instance, "we like what he says, but prefer the old way." The region between the masseter and depressor anguli oris our author denominates *porta*, to which the only objection is that it adds one more to the multitude of names that the student must fix in mind. Instead of *posterior naris*, preference is declared for the term *choana* "to express the parts as seen in the living subject." To the "orifice of communication between the vestibules and the true oral chamber, the very appropriate name of "*præ-coronoid space*" is given. The term *fauces* is nowhere used, it being held that nothing but confusion can arise from the use of a term

such as this, and it is better in consequence to avoid it." In treating of sublingual cystic tumours it is said that "Weber definitely proved that the chief locality is . . . the synovial sac described by Fleishman" (Fleischmann). There certainly are grave doubts in the minds of many of the best anatomists whether any such bursa as that described by Fleischmann is normally to be found.

The sections devoted to the surgical anatomy of and localization of disease in the various subregions of the face are full of interest, and will, we are sure, prove to the majority of readers the most acceptable part of the work. In the paragraphs upon the "region of expression," not a little space is devoted to the wrinkles and their causes, the student being advised to "make a study of faces, searching for meanings among their folds and expressions, and, by studying the wrinkles of others, gain a useful 'wrinkle' here and there for himself." The description of the anatomy of the facial veins is followed by "a view of the subject from a clinical aspect," it being shown that facial phlebitis progresses *upward*, except when originating in the lower lip, "when, as a rule, it is downward." The succeeding paragraph is very properly on facial carbuncle, "the most fertile cause of phlebitis." We have already noticed that the name *porta* is proposed for the region through which the facial artery and vein cross the inferior maxilla; attention is called to the fact that an incision upwards and inwards $1\frac{1}{2}$ inch long, exposing this *porta*, will, "without wounding a single vessel and dividing no part of importance (save the filaments of the facial nerve crossing), afford an easy access to many remote points of the side of the face."

We are somewhat surprised to see it stated that "Bumstead asserts that the soft sore is here unknown." "Rarely, if ever, met with," was that author's opinion as expressed in the first edition of his work, but in the last edition he clearly admits that cases have been seen. If further evidence of the occurrence of "cephalic chancreoid ulceration" be necessary, it is furnished in the paper by Dr. R. W. Taylor, published in Brown-Séquard's *Archives*, No. 5, May, 1873.

The references made to the relations of the transverse process of the atlas to the parotid region will doubtless attract to this process the attention of many who have not particularly regarded it; not more attention, however, than it deserves, if, as Dr. Bigelow believes, "cystic tumours of the neck *almost always* arise from the parts about this process and the styloid process of the temporal bone."

In the sections on the jaws the practical importance of several points treated of will be at once perceived by every reader. Among these are: 1. The fact that both anatomically and clinically the alveolus belongs rather to the teeth than the bone, and, as a consequence, its diseases should be considered as "dental in their significance;" 2. That while the inferior maxilla has certain points of resemblance to the long bones, it has more of difference, which seem to explain its liability to necrosis, and the recognition of which will enable the practitioner to early diagnose the osteitis that precedes the death of the part; 3. The existence of pre-maxillary bones, which may not only fail of normal union with the superior maxillæ, but may, as shown by an interesting case narrated, be lost in consequence of disease; 4. The modification of the "normal and abnormal nutrition of the bones" from their association with a mucous membrane, as results of which "the majority of the errors of nutrition of the upper jaw are of mucous origin," and most fractures of the lower

jaw are compound. What has been written on the third point (the original development by an intermaxillary bone) would, we think, have been made more complete and of more service to others than dental students, had something been added upon hare-lip and cleft-palate.

One of the best sections on the "localization of diseased action" is that upon "the lower jaw as determining the localization of tumours;" the which "from an anatomical standard resolves itself into a few simple propositions: 1. When a tumour originates within or beneath the gum, and involves the cancelli secondarily, it indubitably belongs to the alveolar group of morbid growths. 2. Fibrous tumours. . . . may either arise within the body of the bone, when by their growth they will encompass the bone, or taking their origin beneath the periosteum they protrude toward the affected side. 3. The lower jaw being in the line of growth of epithelial tumours of the lower lip, secondary cancers from that source are not infrequently seen." In treating of the nose and its diseases the usual denial is made of the originating of nasal polypus from the septal wall. That this, however true as a rule, is not a rule without exception, we know from personal observation.

The surgical value of a remembrance of the anatomical structure of the præ-coronoid space in the mouth is shown in the ready development of submucous infiltration in this region, to which attention is directed, and the rapid extension of inflammation from the mucous membrane here to that of the soft palate and the tonsillar space.

Eight pages are devoted to the localization of diseased action in the tongue, and these pages are among the most interesting in the book. What is said upon atrophy of this organ, which, "without pressure or lesion of the trunk of the hypoglossal nerve, is rare," recalls to mind a very marked case of congenital atrophy of the left half of the organ, chiefly affecting its anterior two-thirds, which came under our notice in the person of a medical student.

The surgical anatomy of the pharynx, speno-maxillary and supra-hyoid spaces is duly treated of. Deafness, consequent upon chronic inflammation of the oro-pharynx, is referred to, and it is well for every one to remember that "it is not the fact of engorgement so much as the direction of the extension of the tonsillar mass that may prove mischievous." It is to be regretted that a word had not been added to what has been said respecting post-pharyngeal abscess, calling the reader's attention to its not so very infrequent occurrence in infants, both because of the fact itself, and still more because an incorrect diagnosis is so often made in such cases.

The work closes with the consideration of the *nomenclature of the teeth and the arrangement of the cusps of the teeth*, of decidedly more interest to pure anatomists and dentists than to medical readers in general. It is this part of the book, however, which is the more especially claimed to be an original contribution, and as such all credit should be given.

In conclusion, it only remains to add that the *Studies in the Facial Region* is a gladly welcomed and positive contribution to our medical literature, well worthy of the careful attention of all. The only regret we have is, that, since what has been written is so good, more had not been given, intended for the benefit of medical students and practitioners rather than the limited class qualifying themselves for the duties of "oral surgeons."

P. S. C.

ART. XXVI.—*Erysipelas and Child-bed Fever.* By THOMAS C. MINOR, M D. 8vo. pp. 131. Cincinnati: Robert Clarke & Co., 1874.

THE design of the author will be seen in the following quotation:—

“An inquiry into the connections said to exist between child-bed fever and erysipelas; also a short account of both diseases as they prevailed sporadically in the United States during the census year 1870, and an appendix containing the history of a puerperal fever epidemic observed in southwestern Ohio, in the winter of 1872.” (p. 5.)

His special attention was directed to this subject, by the difference of opinion manifested in the Cincinnati Academy of Medicine, during a discussion on the question: Should a physician attend a case of labour, who has recently been in attendance upon patients suffering from erysipelas?

Contagion.—After some remarks upon the history of puerperal fever and its epidemics, and upon the epidemics of erysipelas which were more or less coincidental with the former, the author takes up the old battle subject of *contagion*, a question which ought to have been set at rest long ago, but which we presume must, from the character of the human mind, always have its advocates and opponents, although it has to be admitted that those who believe in its potent influence can present an array of historical facts not at all easy to overbalance or controvert.

The question of the instrumentality of physicians and nurses in conveying a mysterious miasm, capable of inducing peritoneal inflammation in parturient women, was at one time a very active one in this city, and gave rise to the publication in this Journal, and several medical works, of numerous valuable papers, which collectively afford an exceedingly important, if not almost exhaustive record. The moving spirit in this discussion originated with the late Dr. David Rutter, who was so unfortunate as to meet with 95 cases of puerperal fever in his own private practice, with 18 deaths, in a period of four years and nine months (1841–1846), and at a time when there were very few cases in the hands of other physicians. The visitations of the disease at the Pennsylvania Hospital on several occasions, and at the Philadelphia Hospital, added to the general interest in the subject. As Dr. Minor makes no reference to any of the testimony published in this Journal in proof of contagion in this disease, and its intimate connection with erysipelas, we shall be excusable for enumerating some of the more important, viz.:—

1. Discussion at the College of Physicians, of Philadelphia, reported in the October number, for 1842, pages 410–418.

2. Puerperal fever cases reported by Dr. Robert Storrs, of Doncaster, England, showing the propagation of the disease at his hands, from a case of gangrenous erysipelas, followed by repeated abscesses requiring the lancet (Jan. 1843, page 224).

3. Notice of a malignant epidemic which prevailed in the lying-in department of the Philadelphia Hospital, in March and April, 1842 (*Ibid.*, page 244, op. cit.). Out of nine children whose mothers had puerperal fever, five died of peritonitis in about a week after birth.

4. Contagiousness of puerperal fever, by Dr. Oliver W. Holmes (July, 1843, page 260). . . . This paper contains quite an array of cases bearing upon the connection between the contagion of erysipelas and puerperal fever, and their power of interchange.

5. Drs. Hall and Dexter's account of the erysipelatous fever of Vermont No. CXXXVIII.—APRIL 1875.

and New Hampshire (Jan. 1844, page 13). . . . This is an interesting and valuable paper, showing the remarkable pathological connections which exist between some of the types of epidemic erysipelas, and puerperal fever.

"The most fatal results, for the most part, were to be anticipated in the affection of the internal organs, particularly the bowels and uterus, and during the season when the epidemic might be said to be at its height, not one in seven escaped, who had disease of the last-mentioned organ." (p. 191.)

Those who are only familiar with erysipelas as a cutaneous malady, can form but a very imperfect estimate of that terrible type which is so allied to peritonitis as we find it after parturition, that some pathologists have been inclined to term the latter, "malignant internal erysipelas." (p. 19). Erysipelas in fact will attack skin, connective tissue, inter-muscular laminae, the mucous membranes, serous cavities, and many important viscera, such as the uterus, liver, intestines, etc.

"In the county of Caledonia, Vermont, thirty cases of puerperal peritonitis occurred, only one of which recovered. And in Bath, N. H., containing a population of 1500 to 1600, twenty mothers died from puerperal peritonitis, and about forty with erysipelas." (p. 21.)

In 1843, the cases in Dr. Rutter's practice amounted to 45; whilst at the same time Dr. William Klapp, who lived and practised in the same section of Philadelphia, several times having labour cases in the same row, did not meet with one instance of the disease in two hundred parturient women, as he himself informed the reviewer. As there were no evidences of the disease being properly an epidemic, either from its relative fatality or general distribution among obstetricians, the misfortunes of Dr. Rutter excited a great deal of interest, and contagionists and their opponents warmly discussed the questions involved. Those interested in the matter are referred to the number of this Journal for Oct. 1842, page 412; Charles D. Meigs, on *Diseases of Women*, page 590; and Churchill, on *Diseases of Women*, edited by Condie, page 618.

Dr. Rutter, to rid himself of the mysterious influence which appeared to attend upon his practice, left the city for ten days, and before waiting upon the next parturient case, had his hair shaved off, and put on a wig; took a hot-bath, and changed every article of his apparel, taking nothing with him that he had worn or carried, to his knowledge, on any former occasion: and mark the result. The lady notwithstanding that she had an easy parturition, was seized the next day with child-bed fever, and died on the eleventh day after the birth of her child. Two years later, he made another attempt at self-purification, and the next case attended fell a victim to the same disease.

Dr. Condie says (op. cit.):—

"But he was charged with being a carrier of contagion. How could he carry the cause? What was the cause? Was it some ozone that stuck to his hands or coat?"

Dr. C. D. Meigs remarks (op. cit.):—

"Does the doctor generate and distil the poison, or merely transfer it? If he transfers, why don't I also diffuse it? We are equally men, equally clothed. No, gentlemen, you do not carry the poison; you are merely unhappy in meeting with such accidents through God's providence."

Now suppose we should state, as we do upon the authority of an obstetrical contemporary of Dr. Rutter, that, at the period referred to, he

was the subject of an obstinate muco-purulent coryza, would not that give a reasonable solution of the mystery? Was his pocket-handkerchief not capable of conveying septic poison through his hands to the patient? Some would say no. But what says M. Chaufford, of Paris, as quoted in the last number of this Journal, page 287. *Every suppuration, every disease which produces morbid discharges, if in the vicinity of women in child-bed, will give rise in the latter to puerperal fever*; and he says he has particularly noted the effects of abscess, purulent ophthalmia of infants, and erysipelas. The very successful and distinguished ovariotomist Mr. Spencer Wells, is in the habit of exacting a written and signed statement from each visitor to his operations, to the effect, that he has not been in attendance upon any case of zymotic disease. Ask Dr. Goodell, why he has not had a visitation of the fever among his cases at the Preston Retreat. He recognizes the danger that lies in infection and contagion, and acts accordingly, using every precaution to prevent the possibility of septic or other poisoning, manual or local.

Dr. C. D. Meigs states, page 591:—

“Seeing that I could never convict myself of being the means of spreading the contagion, I remain incredulous as to the contagiousness of the malady.”

It may be entirely coincidental, but we well remember a case which a brother physician put an entirely different construction upon. An eminent obstetrician stated to the writer, that Dr. M. was called in an emergency to deliver a patient of his, after he had left her a short time, the labour having been unexpectedly hastened in his absence. When he found what had been done, he remarked to his wife on reaching home, that he feared for the lady, and anticipated trouble for himself, because Dr. M. had been called from an opposite dwelling, where he was in attendance upon a case of puerperal fever. We do not say that Dr. M. took the disease to her; but she was shortly seized with it, and made a narrow escape for her life. A celebrated obstetrician who placed no credence in contagion in any disease, once said to the reviewer, upon discovering that one of his patients (and he had had a number of cases) had puerperal fever, “Well, Doctor, this is always my unfortunate luck.” We accounted for this case, from the fact that his assistant in the labour had been dressing patients under surgical treatment; no doubt a fruitful source of the disease in the lying-in wards of many a general hospital.

Dr. James Blundell, in his *Principles and Practice of Obstetric Medicine*, page 551, remarks:—

“Remember that the facts affirmative of contagion are so strong, that on this affirmation it becomes our duty to act.”

In the records of puerperal fever we shall find many instances, where the disease has appeared in cases of sudden emergency, when the attendant has not had time to, or has failed to make the proper precautionary ablutions and changes necessary to prevent risk to his patient.

Seventy pages of the work of Dr. Minor are taken up with a critical examination of the census reports of our States and Territories for the year 1870, touching the mortality from puerperal fever and erysipelas; the geographical position, altitude, temperature, and rain-fall being given in each case. From this investigation it will appear that there was no epidemic of either malady at any point that year; that the two generally kept pace more or less with each other; that they were much less frequent among the white race than the black; and that they were most often met

with in the spring months. The whole mortality amounted to 3162 from erysipelas, and 1828 from puerperal fever, in a population of nearly 39,000,000; and the largest proportion of deaths from each malady was in the month of March, which is memorable for its damp, cold winds.

In 1872 and 1873, puerperal fever and erysipelas prevailed as an epidemic in Cincinnati, Ohio, the deaths being 122 of the former, and 68 of the latter, against an annual average for the previous five years, of $13\frac{3}{5}$ and $13\frac{1}{5}$ respectively. The history of this epidemic gives some curious evidences of the interchangeable character of the two diseases.

"Dr. A. loses a patient from puerperal fever on the — of July; duration of illness, 8 days. Six days afterward another 'death certificate,' puerperal fever; duration of illness, 8 days. On August, 'death certificate,' from erysipelas. Four days afterwards, 'death certificate,' from puerperal fever; duration of illness, 6 days." Several other instances of the same character are quoted, with regard to other physicians." (p. 116.)

"It is a sad commentary on this last epidemic, that a few men, who attended cases of erysipelas and puerperal fever promiscuously, should have been most unfortunate in their practice. On the contrary, we notice some physicians, having a large practice, who lost not more than one or two cases of puerperal fever, and no erysipelas cases at all. I think the majority of our physicians refuse to attend confinement cases, when they have erysipelas or puerperal fever cases on their hands." (p. 117.)

Dr. Minor sums up the results of his investigations as follows:—

1. "Erysipelas and puerperal fever seem to prevail together throughout all the States.

2. "Any marked increase in any locality of one disease, seems to be accompanied by a corresponding increase of the other.

3. "Where histories of past epidemics of either disease are obtainable from any of the States, the seeming connection of the two diseases was noticed by physicians at the time of such epidemics, and remarked on.

4. "For these reasons we are, I think, justified in concluding that there is an intimate connection existing between puerperal fever and erysipelas." (p. 119.)

From a study of the Cincinnati epidemic, he makes the following deductions:—

"Where an isolated death from puerperal fever was noted, outside of the infected districts, a corresponding death from erysipelas was noted in the same locality. This was almost invariably the case.

"Infants die of erysipelas shortly after or before their mothers die of puerperal fever.

"A few physicians, attending puerperal fever cases and erysipelas cases at the same time, as exhibited by the death register, were most unfortunate in their practice.

"Physicians having large obstetrical practices, who are known to believe in the doctrine enunciated regarding the connection of puerperal fever and erysipelas, make an exhibit of but few death-certificates from either cause." (p. 120.)

The following statement of Dr. Minor is of considerable interest and importance:—

"An epidemic of scarlet fever is at this date (June, 1874) prevailing in this city, although now happily on the decline. This epidemic commenced in May, 1873, after the subsidence of the puerperal fever epidemic. No month was exempt from scarlet fever, although there were only 15 deaths from the disease during the first four months of the year. Only one of these occurred in April. After that, the deaths from scarlet fever increased each month, until there were from it 113 deaths in November, and 108 in December. The total deaths from this cause were 410." (p. 126.)

Dr. Braxton Hicks remarked before the London Obstetrical Society (*Trans.*, vol. xii., 1870):—

"There is no doubt that scarlet fever and erysipelas have much affinity; indeed some have suspected them to be but a slight modification of the same poison, apparently interchangeable."

But what says the Health Report of Cincinnati. . . In 1874 (up to June 1st) puerperal fever did not prevail; less than the usual number of cases being reported; and the same is said of erysipelas. From May, 1873, to June, 1874, there were about 800 deaths from scarlet fever; and the number of cases was computed at from 6000 to 8000.

If epidemic puerperal peritonitis is due to the same peculiar poison which produces erysipelas, the peritoneal variety of which closely resembles it; then it must result from a combination of certain conditions and circumstances in and around the patient. Traumatic disturbance, acting upon a system peculiarly susceptible of erysipelas, will readily produce it, if the state of the atmosphere, the physical health of the subject, and his hygienic relations are favourable to its approach. We had one female patient who had several attacks of erysipelas in her left arm, but never in any other region; and by far the most severe one was excited by the prick of a needle in the index finger. Another subject, a boy of 17, with a penetrating wound of the thigh, had seven attacks of erysipelas at short intervals, due apparently to attempts made by stimulating dressings to cause the wound through the skin to granulate and heal over; for under a very simple application there was no renewal of the inflammation, and the parts cicatrized.

There are seasons when, in a hospital, not only the slightest wounds become erysipelatous, but the disease will attack, as we have seen, cases under simple mechanical treatment, in the most severe and fatal form; such, for example, as a leg undergoing straightening of the knee by a screw-splint, for partial ankylosis, etc. . . Let a parturient woman have induced in her the same susceptibility, and her utero-placental laceration, like an amputated limb, will offer all the traumatism requisite as a starting-point for a fatal puerperal peritonitis. Increase this danger by an exposure to the infection of this disease, or erysipelas, and she may have the former without any special susceptibility other than the parturient state often produces. Expose her again to atmospheric or manual contamination from septic poison in the form of purulent discharges, or the taint of the autopsy, and you have puerperal septicæmia or phlebitis. It matters little, except for scientific interest, whether epidemic child-bed fever is a disease of multiform character, or whether its varieties are determined by the manner of its production, for all have more or less a fatal tendency under the most approved treatment; but it concerns us to determine how to protect the patient by precautionary and prophylactic measures.

R. P. H.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXVII.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Volume the Fifty-seventh. 8vo. pp. lxiii., 298. London: Longmans, Green, Reader, and Dyer, 1874.

By frequent intercourse with books most men insensibly acquire the habit of regarding them in the light of personal acquaintances, and more especially is this the case when, as an annual volume, the old friend crosses the path at stated intervals, ever in the same shape, but with new contents, and with varying thoughts, feelings, and views. The individual minds which have made the reputation of this most aristocratic of medical publications, and which still contribute to enable it to maintain its pre-eminence, have been and are among the masters in our profession, as representatives of British medicine, and as we take up the book we feel that its inspection will amply repay whatever labour it may cost. It not being our intention, however, to indulge in reflections upon the past and the position these *Transactions* occupy as a whole, we will proceed at once to analyze in two groups, surgical and medical, the different articles in this volume. The surgical papers are numerous and of interest. Some of them, however, having been noticed in former pages of this Journal, require no consideration from us, and we shall merely present short abstracts of those which have not been already brought to the notice of our readers.

On the opening page Mr. HENRY LEE communicates a case of much interest, and one which, so far as our reading enables us to judge, we believe to be exceedingly rare, if not unique. The patient was a girl ten years old who suffered under "*imperfect development of the circular muscular fibres of the rectum and vagina.*" There must have been absence of the perineum itself, for the rectum and vagina had a common opening, such a condition of the parts being represented in the wood-cut incorporated in the text. We are not told how far down the recto-vaginal septum extended, yet that a partition did exist is evident from the fact that examinations of either organ are spoken of as having been repeatedly made. The uterus was rudimentary.

The case presented itself for the relief of obstinate constipation, which had lasted to the formation of an abdominal fecal tumour, which reached down to and distended the cloaca. The symptoms were alleviated by the free use of a scoop and stimulating purgatives, but speedily recurred when the treatment was suspended, and appeared to be dependent upon the imperfect muscular power of the bowel. As the case only admitted of temporary relief and will be most likely to present itself again, we shall hope to hear of it at some other time, and that we shall then be furnished with a more accurate, or, at least, more elaborate anatomical description.

We recollect as a child, when forbidden to eat buckwheat cakes, making up our mind that our doctor was much influenced in his opinions as to what was digestible and what was not, by his own likes and dislikes, and we cannot escape from a similar mental process, and concluding, although, perhaps, upon equally slender data, that Mr. WILLIAM SPENCER WATSON is not a slave to tobacco.

We arrive at this opinion from the suspicion he expresses that "*a case of idiopathic hyalitis*," of which he narrates the history, had its origin in the use of that vegetable bane. Now we fail to see why the occurrence of so very rare an affection as inflammation of the vitreous body without implication of any other ocular tissue, may not just as well coincide with the use of potatoes or tea, but we are not informed whether the patient used either of these articles. Mr. Watson speaks of the great rarity of the disease, and refers to the experiments instituted by Donders and Pagenstecher, who obtained directly opposite results. In our opinion the history of this case, as told, certainly tends to prove the accuracy of the diagnosis of hyalitis. The patient, a middle-aged man of temperate habits, save for the use of tobacco and beer, was almost entirely blind in both eyes; the vitreous body and lens were very turbid; there was much pain and tenderness but no increased tension; both irides responded to the use of atropia, the right more fully than the left; and while there was some sclerotic injection, it did not possess the characteristics of an iritic zone. In the absence of any other cause the trouble was supposed to depend either upon syphilis (of which, however, no reliable history could be obtained) or tobacco. The case came under treatment upon the ninth day of its existence. Under vigorous mercurial medication, and the interdiction of the use of tobacco immediate improvement took place, and proceeded to complete recovery.

The next surgical paper in the volume is the elaborate one by Mr. HUTCHINSON upon *Abdominal Section in Cases of Intussusception*, which has attracted so much attention, and was given in abstract in the number of this Journal for January, 1874, page 257. This is also the case with Mr. TUFNELL's article upon the *Successful Treatment of Aneurism by Position and Restricted Diet*, the salient points of which were presented to our readers in the number for April, 1874, page 540, while at page 547 of the same number will be found a notice of *Dislocations of the First and Second Pieces of the Sternum*, by WALTER RIVINGTON, M.S. Lond., F.R.C.S.

Large Adenocoele, complicated with Milk Cyst, is the title of an interesting, though short, contribution by Mr. F. LE GROS CLARK. The tumour made its appearance in the breast of a girl aged sixteen, enlarging gradually for six years, at which time the patient came under Mr. Clark's care, two years after her marriage. At the time of her admission into St. Thomas's Hospital the woman was in good health, and was suckling a child seven months old from the unaffected breast. The tumour was connected with the left breast, very large, measuring twenty-six and a half inches in circumference, firm, doughy, without fluctuation like a normal breast during lactation, and milk could be expressed from the nipple. The cutaneous veins were much distended, but there was no discoloration or tenderness, although some engorgement of the axillary lymphatic glands existed. The tumour, weighing eleven pounds and having its greatest bulk below the nipple, was removed, the nipple being included in the incisions, which last fact Mr. Clark afterwards regretted, as he did not find it necessary to remove the whole gland. Upon cutting into the mass from behind it was found "to consist of an enormous milk cyst, surrounded by succulent solid walls, on which were milk tubes and at least one extra cyst." The smaller cyst contained very firm cheese, while the larger one was filled with two pints of apparently fresh cream. The cyst walls were of varying thickness up to two inches, and the solid structure, weighing between eight and nine pounds, appeared to be continuous with the tissue of the breast itself. From the result of microscopical examination Mr. Clark, following Mr. Birkett (*vide Guy's Hospital Reports*, 1855), regards the growth as an "adenocoele with ducts

or sinuses and secretion." The patient made a good recovery, but experienced slight inconvenience at her next confinement from engorgement of some residual gland tissue; this did not last more than a few days, however, and was followed by no bad results.

Mr. HENRY LEE contributes a *Case of Primary Excision of the Ankle-joint*, which was done to remedy a compound luxation in which the lower extremities of the tibia and fibula projected through a wound on the front of the joint. The internal malleolus was broken off from the tibia, remaining in its normal position, attached to the lateral ligament. Mr. Lee sawed off the projecting ends of the bones, removed the upper articulating surface of the astragalus, and leaving the internal malleolus undisturbed, dressed the wound antiseptically. After a somewhat delayed convalescence a very useful limb was ultimately preserved, with only half an inch shortening, and firm union of the opposing bones. Through what we suppose to be an error of the printer, the age of the patient is not given, and we are thereby deprived of all knowledge of a factor which is, perhaps, of more importance than any other to the practical surgeon when called upon to make a prognosis in such cases.

From his experience in the above case, Mr. Lee has been led to adopt and recommend a new operation for excision of the ankle different from the one now in use, originally proposed by Mr. Hancock. After performing numerous operations upon the cadaver to test his opinions, Mr. Lee advises to *first* make a longitudinal incision over and down to the internal malleolus, which he removes with the aid of a Hey's saw; *second*, remove the outer malleolus by a corresponding incision upon the opposite side, then, the internal malleolus being out of the way, *third*, lateral luxation can be easily produced and the ends of the tibia and fibula with the surface of the astragalus can be removed with facility. Our author expresses the opinion that partial resections must always do poorly from the extreme slowness with which articular cartilage undergoes disintegration and absorption, and our own experience leads us to regard the objection as well taken.

On the Treatment of Rickety Deformities of the Legs by Operation is the title of an article by Mr. HOWARD MARSH, of St. Bartholomew's Hospital and of that for Sick Children. Four cases are recorded, in three of which simple breaking of the bones of the leg by subcutaneous section and the application of direct force was practised, and one case in which wedges of bone were removed from the tibiae. In each case an operation was done upon both legs at different times, so that in this paper we have really the history of eight instances in which the practice recommended has been successful. Mr. Marsh does not consider that we are justified in lightly resorting to what may sometimes prove a very serious procedure, but advocates such a step only in those cases where, when there exists great and crippling deformity, we are unable to produce a simple green-stick fracture by a proper application of force, which plan of treatment he has found sufficient in the majority of cases coming under his care. The lithograph appended to the paper certainly shows a most gratifying result.

The paper upon *Cases of (so-called) Ichthyosis Linguae*, by WILLIAM FAIRLIE CLARKE, Assistant Surgeon to Charing-Cross Hospital, contains the histories of sixteen instances of this affection. The characteristics given of the disease are that it is always a papilloma which may last quiescent for many, even twenty or thirty years, and then become epitheliomatous. It would appear to be always confined to the oral cavity, invariably beginning upon the dorsum of the tongue. Very rarely an affection presenting similar appearances exists upon other parts of the body congenitally, but from the facts that, in these instances, it is con-

genital, and shows no tendency to become cancerous, it should not be regarded as the same disease. From the place of beginning it gradually extends to the adjacent mucous membrane as an overgrowth of the papillæ and epithelium, having a silvery white appearance quite characteristic. The papillæ are hypertrophied to an extreme degree, sometimes standing out separately, at others several coalescing, or we may observe both the discrete and concrete forms upon the same tongue. The disease never entirely leaves the invaded part, and though it may be much modified by the condition of the general health, never is cured, and, as stated before, ends in cancer. In nature it would appear to be a chronic inflammation of the papillæ combined with impaired power to throw off the constantly reproduced epithelium. In four cases the irritating cause appeared to be local, while in one, inflammation of the internal ear preceded, and seemed to give rise to the trouble, suggesting a nervous pathology, but in the remaining eleven cases no cause whatever is ascribed as the starting-point by the several observers. It appears to be confined to the male sex in early manhood and middle life. While it is sometimes associated with syphilis, often there is no discoverable venereal history, nor does it prove amenable to anti-syphilitic remedies. Mr. Clarke's advice is to excise it at once, if seen when very small, but if at all extensive, more than three-quarters of an inch in diameter, to let it scrupulously alone, merely paying strict attention to the general health: when it becomes epitheliomatous, however, it must be treated as cancer and excised at once without delay. Two lithographs, one of them coloured, illustrate the paper, which must certainly be regarded as an important contribution to our knowledge of the subject, and will well repay a careful study.

A Case of Necrosis of the Jaws and other Bones from the Fumes of Phosphorus, by WILLIAM SCOVELL SAVORY, F.R.S., is remarkable for the extent of the disease, which was even sufficient to produce a fatal result. The patient was a boy eighteen years old, who had been engaged in the match trade for five years. The whole lower jaw, being entirely loose, was easily removed before the formation of any new bone, with the object of mitigating the extreme sufferings of the patient, and in six months an entirely new jaw had taken its place. At the expiration of this time the case terminated fatally from the pain and consequent exhaustion attendant upon the extension of the disease. After death the upper maxilla and all the bones entering into the formation of the nasal cavity, together with portions of the sphenoid and ethmoid bones, were found extensively involved, being worm-eaten and covered with pumice-like deposits; even the enamel of a molar tooth was destroyed. The new jawbone, nearly resembling the edentulous maxilla of a very old person, is represented by two wood-cuts. The very complete restoration of this bone is referred to by Mr. Savory as a remarkable point in the case.

Thinking that the disastrous results which sometimes follow Mr. Critchett's operation for staphyloma are dependent upon injuries sustained by the ciliary nerves, Mr. ROBERT BRUDENELL CARTER proposes an *improved method of Abcission of the anterior portion of the Eyeball*. With a view of avoiding any possible injury of the ciliary nerves, Mr. Carter, after dividing the conjunctiva close to and all around the cornea, inserts a suture in the tendon of each of the recti muscles at a little distance from the cornea, then, dividing the tendons close to their insertion into the sclerotic, he shaves off the front of the ball, and draws the gaping wound together by the sutures, which have a good hold in the straight tendons, and effectually close the incision without involving the tissues of the eyeball by the insertion of a foreign body in it. The operation strikes us as an ingenious one, and should it prove successful upon more extended

trial. will be of value by enabling ophthalmic surgeons to preserve a large and mobile stump well fitted to sustain an artificial eye. A patient was exhibited to the Society, at the time this paper was read, upon whom Mr. Carter had successfully performed the operation described. S. A.

We shall next invite attention to the medical papers.

Mr. WILLIAM M. ORD contributes *Some Notes of a Case of Duchenne's Pseudo-Hypertrophic Muscular Paralysis, with special reference to the Temperature of the Overgrown Limbs, and with general remarks.* There is nothing in the clinical history of this case calling for special notice at our hand; we shall therefore pass at once to the consideration of Mr. Ord's observations in regard to the temperature of the legs. These which had undergone great hypertrophy were always found to be warmer than the thighs. The results of the first observation were as follows: Right thigh, 83.0° ; right calf, 85.6° ; left thigh, 83.6° ; left calf, 85.7° . After the child had been exposed for a few minutes to a temperature of 62° Fahr., the figures were, right thigh, 81.5° ; right leg, 85.4° . On another occasion the temperature of the left thigh was 87.5° ; left calf, 89.7° . Similar observations were made on three other occasions with the result of finding an excess of temperature in the calf of from 1.8° to 3.9° as compared with that of the thigh. A small piece of the muscles of the calf was obtained by means of an emporte-piece or tissue explorer and placed under the microscope, when it was found that the muscular fibres were of full size, well-defined, and free from fat or other accompaniments of degeneration. The striæ were fine, clear, and close. Between the fibres an unusual proportion of fibrous tissue was observed, and also an apparent excess of nuclei on the surface of the sarcolemmata. No excess of fat was detected in this case, but in cases in which the disease is more advanced, not only oil but a large quantity of adipose tissue is found between the muscular fibres. With this overgrowth of fibrous tissue, Mr. Ord is inclined to connect the comparatively high temperature of the calves. In answer to the assertion which is not infrequently made, that the increase in size is a real muscular hypertrophy due to the extra work thrown upon certain muscles by the weakness of others, Mr. Ord replies by saying that he satisfied himself by carefully watching his patient, that the muscles of the calves were, relatively, not stronger than the other muscles, and that they did not do more duty. On the contrary, when he moved about, the boy used the thin but much stronger muscles of the upper limbs to a much greater extent than the enlarged muscles of the legs.

In regard to the pathology of the disease, the author says:—

"After this, I think that the conclusion is fair that first the hyperæmia, and second, the overgrowth, are due to internal causes—to causes affecting nervous centres. And I would further suggest that it is possible that the disease may have its origin in the sympathetic nervous system, outside the spinal cord and brain. The whole story is rather one of weakness following faulty nutrition, than of paralysis of muscular nerves followed by wasting of muscles."

The author points out certain characters which distinguish this disease from the progressive muscular atrophy of infancy, which Duchenne believes has been mistaken for it by Drs. Lockhart Clarke, and Bastian, who think they have proved the existence of degeneration and wasting of the anterior columns and gray matter of the cord, whereas in the examinations of the spinal cord of subjects of the pseudo-hypertrophic paralysis made under Duchenne's own directions, no morbid appearances have been detected. The progressive muscular atrophy of infancy destroys the muscles in, as its name implies, a progressive, although irregular way, and after the destruction of the muscular fibres, pro-

duces local and partial deformities, which are, to say the least, not common in the affection under consideration.

The paper is illustrated by three wood-cuts, giving views of the patients in different positions.

Although not next in order, we shall now, for the sake of convenience, notice Dr. LOCKHART CLARKE and Dr. GOWERS's communication *On a Case of Pseudo-Hypertrophic Muscular Paralysis*. The patient in this case was, as in the other case, a boy, but was older, being $14\frac{1}{2}$ years. Soon after the commencement of the disease his calves were observed by his mother to be unusually large; but long before his death the muscles of the trunk as well as those of the limbs were very much wasted. Many of the muscles were also contracted. Both of the Achilles tendons had been divided nearly four years before the fatal termination of the case by Mr. Adams, who had charge of the patient; and just before this, the notes say, the elbows were flexed and could not be straightened. The hip-joints were flexed, the thighs being brought up towards the abdomen; and the knee-joints were bent at a right angle; both being rigid from muscular contraction, which could not be overcome.

A very full description of the microscopical appearances of the muscles and spinal cord is given, which we shall, of course, be obliged to abridge very considerably.

"The gastrocnemius muscles were," the authors say, "small, not more than one-third of the normal size. Each muscle presented the appearance of a mass of adipose tissue. On section it was pale in colour and greasy to the touch. No trace of red tint could be seen in it. Under the microscope it consisted for the most part of distended fat cells, which lay between and separated widely bundles of muscular fibres. The fat cells were quite similar to those constituting an ordinary lipoma; they varied in size from $\frac{1}{250}$ to the $\frac{1}{1000}$ of an inch. In a few a nucleus could be seen. They contained, when fresh, no crystals. The amount of connective tissue between them was small." "The spinal cord, as it was removed from the body, seemed perfectly healthy and of normal consistence; but after being very carefully hardened in chromic acid, thin sections made in every region revealed, under the microscope, varied and extensive lesions. There was disintegration, in a greater or less degree, of the lateral gray network which is so conspicuous in this region between the *caput cornu posterioris* and the *tractus intermedio-lateralis*, and through which the spinal accessory makes its way in that tract. The tract itself was to a certain extent in a state of incipient disintegration, and on one side was, in many sections, traversed by a dilated and congested bloodvessel around which the tissues had begun to suffer. The white columns were not perceptibly altered, but one lateral half of the anterior white commissure was entirely destroyed and replaced by granular *débris*, by exudations, and extravasated blood-globules, which also filled the triangular space at the bottom of the anterior median fissure."

Both the lateral and posterior white columns were in many sections much damaged by sclerosis. Very similar changes were detected in other parts of the spinal cord, and these are well shown in three plates which accompany this paper.

Dr. CHARLES J. B. WILLIAMS, after briefly referring in his paper *On the Acoustic principles and construction of Stethoscopes and Ear Trumpets* to the history of the discovery of the stethoscope, describes an instrument which he says he has found freer from objections than any other with which he is acquainted. It is made of ebonite, which has the great advantage of being easily formed into any shape, and of being also light, durable, and a good conductor of sound. In regard to the form, he says it is obvious that this should insure complete contact with both chest and ear; and this not only because the con-

duction of sound is thereby facilitated through the solids, but also because the inclosed column of air is thus made *air-tight*, and all external noises and motions being so excluded, is the more sensitive to the vibrations proceeding from the chest. A trumpet-shaped pectoral end secures this perfect contact much more certainly than the conical one in general use. This stethoscope is constructed in two forms; either in a single piece, or with the ear-piece capable of being taken off and of slipping into the hollow trumpet end.

In regard to ear trumpets Dr. Williams says, the best are made of silver, plated metal, or Japauned iron; but aluminium, on account of its lightness, may also be used for this purpose. Polished ebonite also forms a good reflecting surface, and although inferior in power to metal, it has advantages over it in point of lightness and freedom from intrinsic sound. The simplest and most efficient reflector is a hollow cone with a wide base open to receive as large a body of sound as possible, which is reflected directly to the apex, and conveyed through a short curved tube to the ear. To prevent the *conch-like roar* he opens one side of the cone by oblique truncation and prolongs the opening by a slit to within a few inches of the ear. In so doing, he says, "we get an instrument which has an obvious resemblance to the ear of many quadrupeds; and there can be little doubt that this form of external ear is wisely designed to aid their hearing in the simplest and most efficient way, by directing and concentrating sounds, without the confusing reverberations produced in complete tubes and cavities.

The paper is illustrated by four wood-cuts showing the two forms of the stethoscopes and the ear trumpets he recommends.

The patient in Dr. SAMUEL GEE's *Case of Renal Calculi*, was a man thirty-eight years of age, who inherited a gouty diathesis from his father, and who had been from childhood liable to attacks of pain in the right loin. Five months before his death the pain in the right loin became continual. About the same time, he noticed a swelling in the right half of his belly. When he came under Dr. Gee's observation, a tumour could be felt, corresponding in position with the visible swelling, and occupying a large part of the right side of the belly. The upper part of this tumour was hard as stone; the lower part was soft, and gave an imperfect fluctuation; moreover, even in this part hard spots could be reached by deep pressure. After death this tumour proved to be the right kidney, greatly enlarged. Its pelvis, which was very much dilated, contained: 1. A great calculus, weighing 36 ounces. 2. About a thousand smaller calculi. 3. A large quantity of calculous dust and purulent urine. The left kidney was also greatly enlarged, and its pelvis was distended by a calculus which weighed $9\frac{1}{2}$ ounces. Many of the calculi included under the second heading were unusually large, nine of them being larger than a cherry. Concerning the chemical composition of the calculi, Dr. Gee writes: The bulk of the large calculus was found by Dr. Russell to consist of phosphate of magnesia and ammonia nearly pure. Its brown nucleus was more complex in its nature, consisting of oxalate of lime, with traces of phosphate of magnesia and ammonia, carbonate of lime, and uric acid.

Putting aside a case in which, according to Civiale, Pohl found a stone which weighed more than five pounds in the kidney of a princess, two of these calculi are the largest on record.

Dr. JOHN HARLEY, in his report of *Cases of Disordered Muscular Movement, illustrating the uses of Hemlock*, takes occasion to call the attention of surgeons to the advantages they may derive from the judicious use of a plant which relaxes muscular fibre without diminishing the common sensibility or

disturbing the intellectual functions. The muscles of the head and face are apparently affected to a greater degree by it than those of the rest of the body. Hence, as it produces, when pushed, complete relaxation of the orbicularis, it may frequently be given with advantage before the performance of operations upon the eye. It will also be found useful in overcoming the spasm which so frequently renders difficult the removal of foreign bodies from the œsophagus. It has this advantage over anæsthetics, that patients under its influence are able to help the surgeon by their efforts, and to guide them by their sensations.

The medicine was given in three cases of spasm and in one of epilepsy with hemiplegia, and in all with decided benefit to the patient. In the case first reported, in which the symptoms were as severe as in any of the others, there was chronic intermittent spasm of the right pectoral muscles and the left sterno-mastoid, and of the mass of muscles on the side of the neck—a condition which, although not entirely relieved by conium, was very much benefited by it. The largest dose ordered was ʒiv twice a day, but on one occasion a patient took by mistake ʒv . The effects of the hemlock in the case already referred to were as follows: "A fluidounce of the succus produced some giddiness and weakness of the knees, lasting for three-quarters of an hour; short of two fluidounces there was no marked effect on the spasm. Three and a half fluidounces caused great muscular relaxation, and at the end of two or two and a half hours, when the action had attained its maximum force, there was inability to rise from the sitting posture, or to walk without assistance, and as often as the knees were flexed to a right angle or a little less, he fell, and was unable to rise without assistance." There was, in addition, complete ptosis and relaxation of the orbicularis, moderate dilatation of the pupils, double or multiple vision, hanging of the lower jaw, loss of power in the masseters and temporals, and slow, painful, and imperfect deglutition. These effects came on a quarter of an hour after taking the medicine, and gradually increased in intensity until the end of the second or third hour, and then gradually declined and disappeared towards the end of the fifth hour. After doses of four ounces, they lasted for nine hours. The patient who took the dose of five ounces could neither speak nor move his legs for half an hour, but the effects passed off as usual.

If there be any special weakness of a set of voluntary muscles, hemlock will be found to affect these sooner and more powerfully than healthy muscles. It may therefore be used as a measure of the power of different sets of muscles. In regard to the extent to which coneism may be carried, Dr. Harley says the limits of safety are usually reached when deglutition is impeded; for here we trench on an involuntary act, but it may be carried thus far with perfect safety. In concluding his paper, Dr. Harley says: "I would not, however, that any one should be misled by the supposition that all spasmodic affections—all cases of epilepsy, for example—are benefited by hemlock. There is much to be learned in this direction; but, speaking generally, those spasmodic affections which may be expected to yield most readily to its influence have a cranial origin."

Dr. SYMES THOMPSON communicated to the society, for Dr. LEONARD H. J. HAYNE, some notes *On the amount of Carbonic Acid found by experiment in the Air on board Wooden Frigates*, in which very much the same conclusions are announced as were reached by Dr. RATTRAY, who published a paper entitled *An Analysis of Ship Air and its Effects*, in the preceding volume of these *Transactions*.¹ The latter, indeed, seems to think phthisis and scrofula

¹ See number of this Journal for October, 1874.

more common among seamen than the former, whose experience is confined to the royal navy, in which the seamen are of course picked men. The great impurity found by Hayne in the air between the decks and in the lower parts of the ship was carbonic acid. The amount varied at different times and places from 1.03 to 3.21 volumes per 1000. Ozone was never present in large quantity, except on the upper deck. It has been proposed to work an electrical machine occasionally on board ship, to make up the deficiency of ozone in the deeper parts; but the author seems to think that this could only be done at the expense of the already greatly reduced supply of oxygen.

We regret that the space at our command does not permit us to notice Mr. FRED. A. MAHOMED's paper *On the Etiology of Bright's Disease, and the Pre-albuminuric Stage*, quite as fully as its importance demands. The author has noticed that the pulse occurring in erysipelas, the exanthems, and pregnancy—conditions in which albuminuria frequently arises—does not differ materially from that which is usually observed in acute Bright's disease, and that the latter very closely resembles that which has been described and illustrated by the sphygmograph as occurring in the chronic form of the disease. Both conditions are accompanied by a pulse of high tension; that is to say, one which usually requires a considerable amount of pressure, and especially is distinguished by a prolongation or undue sustension of the tidal wave. He therefore suspects that the vascular condition is the cause of the albuminuria, and not the albuminuria that of the vascular condition, as generally supposed. This high tension in the arterial system which precedes the appearance of albumen in the urine, is ascribable, in his opinion, either to the presence of a noxious material in the blood, such as lead, alcohol, uric acid in gout, scarlatinal poison; or else to a sudden chill, causing contraction of the superficial vessels and congestion of the internal organs. If this condition of high tension be sufficiently severe, he continues, transudation of the characteristic crystalloids of the blood, notably hæmoglobine, occurs before albumen appears in the urine, and they can be detected in that fluid by the guaiacum test for blood. A continuance of this condition gives rise to the appearance of albumen in the urine, and, if still unchecked or uncontrollable, Bright's disease in one of its forms ensues. On the other hand, if checked before the albumen appears, or immediately after its appearance, by a brisk purge or other appropriate means, the condition is suddenly changed, the tension disappears from the pulse and the crystalloids from the urine. The following is the procedure which he recommends for the detection of the crystalloids in the urine: Place a drop or two of the urine in a small test-tube; add one drop of the tincture of guaiacum and a few drops of ether; agitate, and allow the ether to collect at the top, forming an upper layer of fluid. If hæmoglobine be present, the ether carries up with it the blue colour that is produced, leaving the urine colourless below. This test is of course open to fallacies; saliva, nasal mucus, and a salt of iodine in the urine, all cause a development of a blue colour with the tincture of guaiacum, some without and some after the addition of ozonic ether. But all these fallacies may, the author says, if proper care be used, be avoided. He has applied this test to urines of all descriptions—to the pale urine of hysteria, to intensely high-coloured urine, to that of phthisis and other wasting diseases, to urine containing bile, sugar, excess of uric acid, lithates, phosphates, and excess of mucus; but in all these with negative results. The reaction can be obtained only in the earliest stages of either the acute or chronic form of Bright's disease, usually before the albumen appears, or when it is present in only small quantities. It does not occur in chronic albuminuria,

except when blood is also present in the urine; when this does occur, the guaiacum test gives by far the earliest indications of its presence that can be obtained.

Mr. Mahomed doubts whether it is strictly correct to apply the term inflammatory to acute Bright's disease. It is not an actual inflammation of the kidney that is the cause, in his opinion, of the symptoms, but a general blood-poison by which the kidney is not alone affected, but suffers in common with other organs, notably those of excretion. In this connection he refers to the views of Drs. Walshe, Fenwick, and Wilson Fox, with which our readers are doubtless familiar. The last-named physicians have demonstrated that a similar condition to that which exists in the kidney exists also in the stomach and duodenum; it probably exists also throughout the intestinal tract. Mr. Mahomed, reasoning from analogy, believes that the skin is affected in a similar manner, namely, that the sweat glands become blocked from a similar proliferation of cells, and are unable to act, thus producing the dryness and roughness of the skin with which all are so familiar in Bright's disease. If a patient having a quantity of effete poisonous matter in the blood, which he is excreting as rapidly as possible, has the function of his bowels or of his skin suddenly or gradually arrested, extra duty will be thrown upon the kidney. This organ, therefore, receives an increased blood supply, and that under a higher pressure than usual. The next step in the process is an increased production of the epithelium of the tubules.

In regard to the hypertrophy of the heart and arteries, so frequently met with in chronic Bright's disease, the author says:—

“I have attempted to prove that this high pressure in the vascular system, is not the result of kidney disease, but of a primary blood poison, and I believe that the fact of increased pressure demonstrated to exist in the capillaries, by exudation through their walls of the crystalloids, negatives Dr. Johnson's view of the production of hypertrophy of the heart by the stopcock action of the arterioles; for if this existed, the pressure in the capillaries would not be increased. I should imagine, moreover, that the effort of the muscular coat of the arterioles to prevent over-distension by the increased pressure would be sufficient to account for their hypertrophy, while the increased work of the heart to overcome the increased pressure in the vessels would be amply sufficient reason for a similar change in that organ.”

Albuminuria is frequent during pregnancy, and is, in the author's opinion, due to the fact that the blood is overcharged with effete material, for the mother has to discharge the excrementitious matters of the fœtus by her own excretory organs; her blood is therefore in a measure poisoned, and like a scarlatinal convalescent, does not bear its normal relation to the tissues, while the organs of excretion have to do increased work, and that under increased pressure; should then one of them be interfered with, as by constipation or a chill, albuminuria appears a very probable result.

The paper is illustrated by numerous cuts representing sphygmographic tracings obtained in cases of Bright's disease.

Mr. EDWARD SPARKS, in the course of an article *On a Disease of the Skin produced by the Acarus Folliculorum, illustrated by Cases observed in the Dog*, alludes to the fact that, notwithstanding that the experiments of Dr. Gruby, performed in 1846, when he was professor of anatomy and histology in Paris, show that extensive loss of the hair and an unhealthy condition of the follicles of the skin follow the inoculation of dogs with acari, most of the writers on dermatology believe that the parasite gives rise to no disease—not even to comedones or acne. Reasoning from some observations which he has recently made upon dogs that were the subjects of this disease, he believes this opinion

to be incorrect. The dogs, three in number, which had acquired the disease in an unknown way, all died in consequence, it was believed, of the loss of their hair. In all three of the animals there was an enormous number of the acari present, dilating the hair-follicles and filling the sebaceous glands, so as completely to destroy their secreting cells. There were also inflammatory changes in the cutis of greater or less extent, arising from the irritation of the acari and the scratching of the dog. The paper is illustrated by a plate showing the alterations in the hair follicles produced by the acarus.

The concluding paper in the volume is by Dr. HORACE DOBELL, and is entitled *A Contribution to the Natural History of Pulmonary Consumption, consisting of an Analysis of One Hundred Male Cases of Hæmoptysis*. This analysis shows the relation in point of time between the first hæmorrhage and the first loss of weight to be as follows: First hæmoptysis occurred before first loss of weight in 8 per cent. of the cases. At the same time as first loss of weight in 10 per cent., and after first loss of weight in 82 per cent. The relation which cough bore to hæmoptysis in these cases, as regards priority, will be seen from the following: First cough occurred before first hæmoptysis in 87 per cent. At the same time as first hæmoptysis in 12 per cent. After first hæmoptysis in 2 per cent. Cough preceded first loss of weight in 69 per cent., and was preceded by it in 31 per cent. of the cases. Dr. Dobell, while holding that hæmorrhage is not often the cause of lung disease, admits that in some cases it may be so. "I am disposed," he says, "to place it only as one item, and that a very occasional one, in a large and important group, embracing all foreign substances which find their way into the peri-vascular and peri-alveolar tissue of the lungs, and by their irritation there, set up lymphatic (adenoid) and connective tissue cell-proliferation and its consequences." J. H. H.

ART. XXVIII.—*Transactions of the American Ophthalmological Society*. Tenth Annual Meeting, 1874. 8vo. p. 274. New York: Wm. Wood & Co., 1874.

THIS number of the *Transactions* contains more than twice as many pages as the last, and represents an amount of good work most creditable to a comparatively small society, only twenty-six members being present.

The first paper is by Dr. H. D. NOYES, who reports a case in which *astigmatism* seemed to have been produced by *tenotomy* of the internal recti muscles for the relief of diplopia due to paresis of the left externus. The left internus was cut three times and the right once. Five years after the first operation a myopic astigmatism of $\frac{1}{4}$ in each eye had increased to $\frac{1}{5}$ in the left eye, and $\frac{1}{6}$ in the right, and two years later there was $\frac{1}{2}$ in the left and $\frac{1}{6}$ in the right. He calls attention to the common association of myopic astigmatism and muscular insufficiency, and suggests the possibility that a certain number of cases of astigmatism may have their origin in defective muscular equilibrium.

Dr. WM. THOMSON reports several cases of *conical cornea* in which vision had been very much improved by correction with cylindrical glasses of high power, and urges the importance of making a careful optical analysis of such cases before proceeding to operative interference.

An interesting point in these cases is that "their histories demonstrate that the optical defects were induced in eyes that were probably emmetropic, by

prolonged strain of the eyes in reading with insufficient illumination when the individuals were rendered vulnerable by causes which produced general debility of their systems."

Dr. HASKETT DERBY contributes a paper "*On the Atropia Treatment of Acquired and Progressive Myopia.*" Since Donders, in his classical work on Refraction and Accommodation, stated, in speaking of the pain and fatigue suffered by many myopic persons when using their eyes for near work, that "a species of spasm of the accommodation is not unfrequently associated with this irritable condition, and an even-increased degree of myopia is found, which disappears, however, as the irritability diminishes," the occasional occurrence of such accommodative spasm has been admitted by all ophthalmic surgeons. Dr. Derby shows, by his own statistics and those of other authors, that this complication is much more frequent than is generally supposed, and adopts the view of Dobrowolsky that the symptoms of irritation depend on the cramp of the accommodation, and do not, as Donders supposed, act as its cause. This view naturally suggests the therapeutic use of atropia, which has accordingly been employed by Dobrowolsky, Hosch, and Scheiss.

"To Prof. Scheiss belongs the credit of utilizing the researches of Dobrowolsky for ophthalmic practice. So long, he justly observes, as myopia was considered largely hereditary and entirely incurable, the ophthalmic surgeon contented himself with giving suitable cautions and prescribing, in general terms, a course of dietetics calculated to arrest the progress of the trouble he had no hope of ameliorating. But with the knowledge that the affection commenced in many cases with an accommodation spasm, antedating the organic change, and with the certainty that it was often acquired during school years or in early life by individuals manifesting no hereditary predisposition, born emmetropic and even hypermetropic, to a much greater extent than had ever been imagined, came the idea of probable arrest and possible diminution, and even cure.

"Withdrawing his patients from all use of the eyes on near objects, and arming them with protection glasses, he ordered twice daily the application of a solution of one part of atropia to 120 of water, and kept this up ordinarily for three or four weeks."

Dr. Derby has treated sixty-seven cases in this manner, and from his own experience, as well as from the results obtained by others, draws the following conclusions:—

"That the emmetropic eye, through undue or disadvantageous use, acquires myopia much more frequently than has previously been supposed, and that such acquired myopia is very apt to be progressive, commencing with spasm of accommodation and going on through a state of congestion and irritation to the structural change characteristic of this error of refraction.

"That paralysis of accommodation by means of atropia, persisted in during a period of several weeks, and furthered by rest of the eyes, shaded glasses, and in extremely aggravated cases by local blood-letting, offers a reasonable prospect of preventing the progress of myopia, in some instances of lessening its amount, and in occasional recent and slight cases of removing it altogether.

"That in cases of progressive myopia it is reasonable to expect positive results from an annual course of treatment similar to the above, carried on during those years which experience has shown to be most favourable to the advance of the myopia, thus enabling the patient to tide over a critical period."

A tabular report of the author's cases is appended to the paper. Ten of these cases were of hypermetropic eyes, and in them, at least, we think the accommodative spasm must be considered as an effect rather than a cause of irritation; the effect of overstraining of the ciliary muscle in its constant effort to accommodate the refraction of the eye to its shortened axis. The irritable condition of these eyes and their apparent myopia would probably have been

best relieved by persistently wearing the proper convex glasses. We are not sure that a certain number even of the myopes would not have been benefited by the concave glasses that corrected the real, not the apparent, myopia. According to Dobrowolsky, "myopes being, under all circumstances, unable to see distant objects distinctly, are less tempted to relax their accommodation for the far than emmetropes. The ciliary muscle is thus apt to remain in a constant state of tension." If this explanation is correct, why is it not rational, theoretically at least, to remove the cause by giving such patients glasses that will enable them to see distant objects with distinctness? The author justly says that "the whole subject needs and deserves further investigation and the collection of much more numerous statistics." It has been shown that we have in atropia a valuable therapeutic agent in the treatment of myopia, the extent of its applicability can be determined only by just such practical clinical work as Dr. Derby has done.

Dr. H. D. NOYES reports a "*case of extreme myopia*" in which a pair of Steinheil glasses were ordered for reading. These glasses consist of solid cones with the surface at the larger end convex and the opposite one concave. They act on the principle of the Galilean telescope, and are practically small opera glasses.

Dr. JEFFRIES reports a series of experiments on *visual acuteness* with Snellen's, Dyer's, and Green's test-types, hung in the sunlight while he remained in the shade. He states that in this way he can distinguish No. XX. at forty-seven feet. This indicates that he has more than double the average acuteness of vision, that too low a standard has been selected, or that the acuteness of vision varies over a very wide range with different intensities of light. Perhaps all of these factors may exist to a greater or less extent. After all, the test is only an approximation, and taking all ages, conditions, and circumstances into consideration, perhaps it is as close a one as can be reached.

Dr. E. G. LORING describes a "*New Modification of the Ophthalmoscope*." It differs only in its mechanical construction, from one figured by Knapp in the last number of the *Archives of Ophthalmology and Otology*, and the main features of both may be found in an instrument introduced by Wecker, of Paris, about two years ago. We have been treated to so many ophthalmoscopic novelties in the last year that, it must be confessed, we are growing a little *blasé*, and beginning to fear that of the making of new ophthalmoscopes there is no end.

Dr. W. F. NORRIS reports two *cases of optic neuritis* with "choked disk," one resulting from cerebellar sarcoma, and the other from lead poisoning. The paper is accompanied by five very beautiful chromo-lithographs, representing the microscopical structure of the tumour and sections of both disks.

The author concludes that "the excess of the cerebro-spinal fluid, and the dilatation of the outer sheath of the optic nerves, and consequent increase of sub-vaginal space, would seem to show that, in these cases at least, the choked disk had been produced by the pressure of the subarachnoid fluid at this point."

Dr. CHAS. S. BULL reports on the "*circulation of the optic nerve and retina in diseases of the spinal cord and membranes dependent on caries of the vertebræ*." Eleven cases were examined. No constant lesion was found, but in all but one case the disks were congested, and the retinal veins enlarged.

A *sypilitic gumma in the ciliary body* is described and figured by Drs. LORING and ENO. The accompanying engraving of a microscopical section of the tumour by Dr. Eno, is a fine specimen of etching, a most enviable accomplishment for a pathologist.

Dr. JOHN GREEN contributes an article "*on color-tests for ametropia, based upon the chromatic aberration of the eye,*" founded on an experiment of Dr. Wollaston recorded by Thomas Young.

"He looks through a prism at a small lucid point, which of course becomes a linear spectrum. But the eye cannot so adapt itself as to make the whole spectrum appear a line; for if the focus be adapted to collect the red rays to a point, the blue will be too much refracted, and expand into a surface; and the reverse will happen if the eye be adapted to the blue rays; so that, in either case, the line will be seen as a triangular space."

Exhibiting this experiment to numerous friends, Dr. Green finds "that the emmetropes and myopes among them all describe the spectrum of the lucid point as triangular, with the apex red; the hypermetropes, on the contrary, see it with the apex violet, or at any rate with the violet end quite narrow. We have thus a direct and delicate test for ametropia, not dependent on the recognition of letters."

"In measuring myopia by this method, I have succeeded best by directing the attention to the red apex of the spectrum: the weakest concave glass, through which the apex appears as a sharp red point, being the measure of the myopia for red rays. Adding to this the correction for the brightest part of the spectrum; viz., the yellow, a correction which I have found to be about $\frac{1}{144}$, we have the measure of the actual myopia in the meridian corresponding to the direction of the refracting edge of the prism. In hypermetropia also, it has seemed to me most satisfactory to take the red end of the spectrum for observation, noting the strongest convex glass, through which the apex appears perfectly sharp."

Dr. Green also suggests that this experiment of Wollaston's affords a striking illustration of the non-achromatism of the eye.

Dr. WADSWORTH reports *two cases of intra-ocular sarcoma*, Dr. THOMSON, one of *pigmented sarcoma* Dr. MATHEWSON, one of *melanosis of apparent traumatic origin*, and Dr. BULL *two cases of syphilitic lesion of the eye*.

Dr. HASKETT DERBY gives a detailed account of a *case of sympathetic ophthalmia* in which the symptoms persisted after enucleation, and were relieved by removal of the extremity of the optic nerve and surrounding tissues. The improvement, however, was not permanent. Two fresh attacks of inflammation occurred a few months afterward.

Dr. JEFFRIES reports a case in which a *piece of steel in the globe caused sympathetic trouble* in the other eye *thirteen years after the injury* was received. "The metal had lain years in the choroid without affecting the other eye. When the ciliary region became affected, as shown by external redness, then only did the formerly well eye begin to show trouble, which enucleation at once relieved."

Dr. AGNEW gives an account of the *trephining of the cornea for the removal of a foreign body deeply imbedded in its substance*.

A *new method of treating blepharospasm* is described by Dr. MATHEWSON. The treatment was suggested by that employed by Dr. Van Bidder, of New York, in a case of ptosis, and consisted in raising the upper lid by means of a slender band of India rubber, fastened near the edge of the upper lid below, and to the forehead above, with strips of isinglass plaster and collodion. The band was worn without inconvenience for twelve days, when the spasm was found to be entirely overcome.

Dr. Agnew reports a *case of double, extremely minute, and apparently congenital lachrymal fistula*.

Under the head of *new instruments*, Dr. MURDOCK describes a lid speculum, so constructed that it can be removed very quickly, and without danger of pressure on the ball. The upper arm is movable, and drops at once on the turning of a screw. He uses, in connection with it, a crossed branched self-

retaining conjunctival forceps, with a series of ratchet teeth on its under surface, which catch on a horizontal bar attached to the speculum. The two together form an automatic eyeholder, which may be found very useful when operating without an assistant. Dr. M. has also added a cutting edge to the crochet-pointed strabismus hook of Dr. Theobald, with the design of using it at the same time as a hook and a knife.

Dr. HAY describes an instrument for facilitating section of the optic nerve in enucleation of the ball:—

“It is a kind of two-branched blunt hook. The branches are smooth, thin plates, so shaped as to fit the posterior surface of the eyeball. They are somewhat parallel with each other, long enough to pass about three-quarters the way around the posterior half of the eyeball, and separated by an interval of a quarter of an inch to allow the optic nerve to pass between them.”

Dr. NOYES gives a description of a retractor of the upper lid:—

“It has been devised after reflecting upon the manner in which the upper lid is lifted, viz., by being, as it were, rotated over the spherical surface of the eyeball. In other words, because, in being elevated, the upper lid retreats under the roof of the orbit, an effectual instrument to perform this movement must follow the lid into the cavity of the orbit. The method by which this new retractor acts is at once apparent. It catches the tarsal margin as a pen is laid in a rack, and carries the whole lid under the orbital roof as far as may be desired.”

He also describes a fixing forceps designed to be attached to the lid speculum to enable the operator to dispense with the services of an assistant. Woodcuts of all these instruments are furnished, without which it is almost impossible to give an intelligent description of them.

One case of *herpes zoster ophthalmicus* is reported by Dr. WADSWORTH, six by Dr. JEFFRIES, and six by Dr. MATHEWSON. Two of these cases, one by Dr. Wadsworth and one by Dr. Mathewson, are of special interest, as they afford exceptions to the rule, usually considered invariable, that when the whole side of the nose is affected in this disease the eye does not escape. Dr. Wadsworth suggests a variation in the nerve distribution, and, in support of this theory, quotes a case reported by Prof. Turner, in which the frontal nerve gave origin to a long slender infratrochlear branch which passed below the pulley of the superior oblique muscle, to be distributed along with the infratrochlear branch of the nasociliary nerve.” Dr. Mathewson, at the suggestion of Dr. Prout, treated his patients by local galvanization, which was very “successful in relieving pain and apparently in modifying other symptoms.”

Dr. ALTHOF contributes a paper entitled “*Canthoplasty—a Clinical Study.*” The object of this operation is to relieve the ball from excessive pressure of the lids by enlarging the commissure, and it has often been “tried in various conjunctival affections without having ever been methodically put to a severe test.” The author has given it an extensive trial and has arrived at the following conclusions: “In trachoma, diphtheria, and blennorrhœa it may prove the chief agent of treatment. In trachoma, and phlyctenular conjunctivitis, and keratitis, its principal merit lies in shortening the attack, preventing relapses, relieving suffering quickly, and supporting powerfully the efficiency of other remedies. In diseases of the lids requiring operations it greatly improves the chances of the latter. In ulcer serpens and diffuse keratitis it may become a desirable support of the treatment so far in use.”

Dr. PROUT reports a case of *Schneller's operation for entropion*. An elliptical portion of the skin of the lid is included by two incisions, but left in place, instead of being removed as in the usual operation. The skin above and below it is then dissected up, and the two free margins brought together by sutures

over the circumscribed portion. The covered piece acts the part of a splint in stiffening the lid, and is said, after a time, to lose its epithelium and unite with its covering.

Dr. AGNEW gives statistics of one hundred and eighteen recent cases of *cataract extraction*. The methods of operating used were those known as Graefe's, Liebreich's, Lebrun's, and the "old flap." Dr. Agnew says: "My opinion has, at times, been much unsettled as to the method which offers the best prospect of useful vision in the greatest number of cases. I have, however, about come to the conclusion that the Graefe operation is the best, provided the middle of the cut is not made far from the junction of the sclerotic and clear cornea." Dr. Knapp is in the habit of making the same modification in the Graefe operation, as stated in the last number of the *Transactions*. "The centre of the flap touches, or nearly touches, the upper transparent margin of the cornea." This agreement of two of our most experienced operators on this much discussed question is worthy of note. The following table gives Dr. Agnew's results:—

Successes	77½ per cent.
Partial successes	10½ " "
Failures	9½ " "
Unknown	2½ " "

In the cases recorded as successes vision ranged from $\frac{2}{80}$ to $\frac{20}{200}$, and in the partial successes from $\frac{1}{12}$ to the ability to count fingers. Anæsthetics were used in the majority of cases.

Dr. J. F. NOYES describes a "*new method of operating for strabismus*." The correction is "effected by shortening of the opposing or elongated muscle, and without disturbing, also, the point of attachment or insertion of the tendon on the ball." And the operation is performed in the following manner:—

"The patient being fully under the influence of chloroform or ether, the lids secured wide open by a stop speculum, a horizontal incision or slit is made in the conjunctiva directly over the tendon, sufficiently long, through which the tendon is lifted out on a blunt hook. The tendon is then divided quite near to its insertion on the ball, leaving enough end or stump so that the other end of the divided tendon can be carried under it, lapped and secured by sutures. The amount of shortening thus effected must, by actual measurement, equal the deviation to be corrected. If it be found necessary to do this, a portion from the end of the tendon may be cut off before carrying it under and lapping as already described."

We are glad to learn that a Report on the Progress of Ophthalmology, which has been omitted in this and in the proceeding number of the *Transactions*, has been provided for in the next by the appointment of Dr. O. F. Wadsworth, of Boston, to the work.

G. C. H.

ART. XXIX.—*Transactions of the American Otological Society*. Seventh Annual Meeting, 1874. 8vo. pp. 127. Boston: James Campbell, 1875.

THE first paper is the "*Report on the Progress of Aural Surgery*" during the year, by Drs. BURNETT and BLAKE. The names of the gentlemen appointed to this service were sufficient warrant that it would be faithfully and ably done, and this expectation has not been disappointed. As it is itself a summary, it is scarcely possible to condense it fairly, and we must advise those who are interested in the subject to read the report. It will be seen that much interesting and valuable work has been done in aural surgery during the year, though it must

be admitted that no brilliant novelty has been introduced; aural, like ophthalmic, surgeons having been occupied of late rather in diligently developing the ground already brought under cultivation than in seeking to enlarge their boundaries.

The report is divided into three parts: Anatomy and Physiology, by Dr. Burnett; Pathology and Therapeutics, by Dr. Blake; and Reviews and Book Notices by each; and a full bibliographical record is appended.

The second paper is by Dr. BUCK, on "*The Ultimate Forms of Granulation Tissue in the Ear.*" Some of these growths have a covering of skin or mucous membrane, according to their locality, but a larger portion consist of simple granulation tissue. A portion of the cells formed go to build up tissue, and increase the growth, while the majority are cast off in the form of pus. This tissue may remain for an indefinite period in a state of nearly absolute inactivity; it may be cast off from its base by wasting of the pedicle; it may assume the form of a localized hypertrophy of the subcutaneous or submucous connective tissue; it may undergo horny degeneration, or it may change into true osseous tissue. The histories of cases illustrating these different forms are given.

Dr. MATHEWSON reports a "*Case of Otitis Media Purulenta, with Sinus Opening into the Pharynx.*" Pus could be seen issuing from a sinus opening to the outside of the tonsil through the anterior palatine arch. Pressure at this point or against the side of the neck below the mastoid process forced pus into the external meatus. Pus also came freely into the meatus when the patient stretched his mouth widely open.

Dr. POMEROY reports a case of *aural polypus* having a cartilaginous and osseous base.

Dr. BLAKE contributes a paper on the "*Mechanical Value of the Distribution of Weight in the Ossicula.*" To determine the distribution of weight in the adult ossicula, "the bones were carefully measured *in situ*, and a line drawn from the centre of the processus brevis across the corpus incudis, and base of the capitulum mallei to the base of the processus gracilis—this line corresponding to the axial line of vibration of the malleus and incus. The bones were then removed from their attachments and carefully prepared to remove all soft tissue, and a section made along the line drawn, by means of a hair saw." The proportion of the weight of the superior portion to that of the inferior was found to be about 15 to 8. This "preponderance of weight in the upper portion of the malleus and incus, acting as a counter-balance, serves to increase the delicacy of a mechanism which responds to sound waves in excursions so infinitesimal that the highest power of the microscope cannot render them visible."

Dr. BLAKE also has an article on "*Perforations of the Membrane of Shrapnell in Purulent Inflammation of the Middle Ear.*" The laxity of this part of the membrana tympani and its position near the upper margin make perforations at this point comparatively rare. Dr. Blake refers its occasional occurrence to localized disease of the contiguous parts, and particularly to ulceration and granulations or polypoid growths, occurring in the upper and outer portion of the tympanic cavity.

Dr. Burnett also reports a case of perforation of this part of the membrane, with polypoid growths.

Dr. H. D. NOYES reports a case of "*Irritation of the Chorda Tympani, Paralysis of Facial; Polypoid Growth upon the Membrana Tympani, Periostitis of the Malleus and adjacent Bony Textures.*" There was complete paralysis of the left side of the face, and an irritation of the left side of the tongue, increased by pinching the pinna or even by passing the finger over the

side of the face. The patient noticed a sensation of taste whenever he attempted to move the paralyzed side. There was a polypoid growth the size of a pea upon the upper and middle portion of the membrane springing from the manubrium of the malleus. By the study of this case, "no new facts are shown, but the results of experiments upon animals are confirmed. It appears that the nerve has no control over the muscles of the tongue but simply excites sensations of pain and of taste, which are perceived chiefly at the side and upon the back of the tongue. It also, in a marked degree, provokes secretion from the submaxillary gland, and in a less amount from the carotid."

Dr. GREEN contributes a paper on "*Neuralgia in and about the Ear.*"

"That the ear and its neighbourhood should be subject to neuralgia can excite no wonder when we consider its nervous relations; for it is no exaggeration to say that no other organ in the body is in direct communication with so many important nerves as the ear.

"These neuralgias have been of two varieties, reflex and non-reflex. Of the reflex variety, we may have neuralgia of the tympanic plexus, or of the nerves of the Eustachian tube. Of the non-reflex variety we may have neuralgia of the auriculo-temporal branch of the trigeminus; a zoster of the small branches of the trigeminus or facial which supply the tragus and walls of the meatus; a zoster of the small branches supplying the fossa of the helix, and also a cervico-occipital neuralgia, in which the pain is referred to the mastoid region."

The most frequent form of reflex neuralgia is that excited by carious teeth. Cases have been observed in which reflex neuralgia of the tympanic plexus was excited by disease of the larynx through the auricular branch of the pneumogastric.

This connection is also occasionally shown by the occurrence of "ear-cough" excited by irritation transmitted from the ear to the larynx.

Dr. WEBSTER reports a "*Case of Chronic Suppurative Inflammation of the Middle Ear,*" terminating fatally from the extension of the inflammation to the internal ear and the brain. No *post-mortem* was permitted.

Dr. POMEROY reports nine "*Cases of Tenotomy of the Tensor Tympani Muscle, done posteriorly to the malleus handle by Gruber's instrument.*" The hearing was improved in two cases, and the tinnitus diminished in five. There were unpleasant results in one case only, in which the operation was followed by violent suppuration, and a large perforation of the membrane.

Dr. BURNETT reports a case of "*So-called Ménière's Disease,*" in which "most of the attacks of vertigo, always accompanied by perfect consciousness, were characterized by an apparent motion in a vertical plane from front backwards, *i. e.* in the plane of the superior semicircular canal."

"In this case we have a collection of clinical phenomena, partly of a subjective nature, most strikingly in accord with the recent brilliant and important experiments of Mach, Breuer, Cyon, and Curschmann, all of which have added many facts tending towards the conclusion that, although the semicircular canals may not be devoid of acoustic functions, they seem to possess well-marked functions presiding over the pose of the head, and mediately over that of the entire body."

G. C. H.

ART. XXX.—*Transactions of American State Medical Societies.*

1. *Transactions of the Texas State Medical Association.* Sixth Annual Session, April, 1874. 12mo. pp. 210.
2. *Proceedings of the Medical Association of the State of Arkansas.* Fifth Annual Session, Oct. 1874. 16mo. pp. 43.
3. *Transactions of the Mississippi State Medical Association.* Seventh Annual Session, April, 1874. 16mo. pp. 118.
4. *Transactions of the Medical Society of the District of Columbia.* January, 1875. 16mo. pp. 24.
5. *Proceedings of the First Annual Meeting of the Eastern Medical Association.* Held at Newbern, N. C., Nov. 1874. 16mo. pp. 72.

1. THE present number of the *Texas Medical Association's Transactions*, though principally made up of minutes and papers connected with the last annual session, contains also the proceedings, and a few addresses and memoirs, of the two meetings immediately preceding. Two of the three presidential addresses illustrate the curious proclivity of our professional orators to indulge in historic retrospect, stretching back into the dimmest antiquity.

In one of the addresses we find stated a singular evidence of popular inappreciation of medical knowledge and services. We refer to the recent appointment by the Galveston Chamber of Commerce, of a committee of five to investigate the late epidemic, commonly spoken of as one of yellow fever. This committee consists of five lawyers.

The need has, here as elsewhere, been experienced, of legislative regulation of medical practice. Indeed a law has been passed, designed to protect the upright and qualified practitioner against unscrupulous rivals; but it is so loosely drawn as to effect little good. The president recommends that the Association frame a proper and efficient act, which the legislature can be urged to pass. It is also advised that the Association should be endowed with the functions of a State Board of Health, existing arrangements not having proved satisfactory.

The portions of this pamphlet likely to be of permanent value are the various accounts of the epidemic of 1873, as observed by different men and in different counties. Most of the reporters style it yellow fever; others, dengue; one, hemorrhagic intermittent or remittent; and one inclines to deem it malarial diarrhœa, or a combination of pernicious intermittent with cholera. The epidemic was certainly one of great interest and of marked peculiarities. All these observers attribute its prevalence in certain places to local causes, especially to filth and generally bad sanitary surroundings. They do not think it spread by contagion, and condemn quarantine measures as utterly powerless for good, while productive of incalculable distress. We incline to believe that this disease was not yellow fever, but a malignant malarial fever with hemorrhagic symptoms. It attacked many persons who were believed to be fully acclimated, and thus safe from yellow fever.

Among surgical cases and operations reported we find the following: *imperforate anus*, *radical cure of hernia*, *ovarian tumour*, and *vesical calculus*. Notes are given of a case of *hydrophobia*, of several cases of *puerperal convulsions*, and of four cases of *cerebro-spinal meningitis* treated with ergot and bromide of potassium. Dr. Wallace presents a report upon *hæmaturia miasmatica*.

As is too often the case with the transactions of our State Medical Societies, but little care has been bestowed upon the literary style of some papers. Some

addresses also deal a little too much in the glittering generalities of rhetoric. But even in these directions, the indiscretions here observed are far less gross and astounding than we have met with formerly in some less distant quarters. Most of the practical matter, especially concerning the epidemic, is valuable, and is reported in an intelligent and straightforward manner.

2. We are very sorry to learn from the last publication of the *Arkansas Medical Association* that certain unhappy dissensions, which called for action at a previous meeting, have since so far increased as to cause the withdrawal from the Association of its President and several Fellows.

The presidential address contains some very sensible remarks and recommendations, clothed in rather flowery language, as to the need of legislation to exclude from the practice of pharmacy and of medicine unqualified pretenders, to punish abortionists, to secure efficient registration, to compel vaccination, and to organize and support a competent board of health.

A most wonderful recovery from compound and comminuted fractures of right thigh and left leg is here reported. As the case has been already communicated to the profession through the *Medical and Surgical Reporter*, Aug. 15, 1874, we need not repeat this extraordinary history, except to say that, two months after the communication to the *Reporter*, the patient was walking about town with no perceptible limp.

A terrible case of *Elephantiasis Arabum*, here described, has also been previously published.

Among a few brief reports of cases we find one of an anomalous case of *cerebro-spinal meningitis* (?) of a remittent type; another of *encephaloid disease of the bowels* in a child. Dr. Dunlap reports the successful treatment of a fractured humerus, where the site of an external wound, and the ensuing symptoms, indicated that the brachial artery was severed.

3. We notice from the records of the *Mississippi Medical Association* that the subject of alcoholic intemperance has been brought prominently before that body. A committee has been appointed to collect statistics, and to plan a bill for establishing a State Inebriate Asylum. This bill, if approved by the Association, is to be proposed for adoption by the Legislature.

The address of the President, Dr. Taylor, entitled *Popular Education on Medical Subjects*, is characterized by good sense and by clear and vigorous expression. Its latter pages overpass the strict limits of the nominal topic, to make a just and forcible exposition of the true aims and duties of medical associations. One suggestion, looking towards an elevation of the standard of professional education, is to deprive the colleges of the authority to admit men into the practice of medicine, and vesting this authority in the State Society. We firmly believe that, in some such manner, there should be removed from the medical schools the demoralizing temptation to attract large classes by underbidding each other as to time, labour, and money requisite to procure a diploma.

In the Annual Oration, Dr. Hicks treats, in a very pleasant and sensible vein, upon the rights and duties of medical men, as regards each other, their teachers, the public, and the government. We were a little dismayed when we found the Doctor going back to Esculapius for a fair start, but were all the more agreeably surprised to find the paper so readable.

A paper by Dr. Vaughan upon *Improvements in the Treatment of Uterine Diseases*, seems to have for its leading motive the idea that in most diseases of the womb, so called, the physician's attention and treatment would be more wisely directed to the ovaries than to the uterus. This proposition is enforced by a

somewhat full exposition of the close connection of these organs, as to blood-supply and innervation, and of the physiology of the parts.

A paper upon *Hypodermic Medication* is not without interest.

In a brief memoir upon *Malarial Hematuric Fever*, the statement is upheld that the hemorrhagic symptoms occur only in patients whose spleen is hypertrophied and liver diseased.

A reporter upon the famous epidemic of 1873, as it appeared in Vicksburg, represents that the *dengue* and the *yellow fever* prevailed simultaneously, though the former both preceded and outlasted the latter. He describes patients as attacked with the *dengue*, becoming convalescent in a few days, and then being smitten with the graver malady. We doubt whether this view of the cases would be generally accepted.

Dr. Hill reports a case of *Cranial Fracture with Brain Wounds*, so severe that the reported recovery seems almost incredible. The patient was a negro lad, seventeen years old. From one wound, involving the cerebral substance, was removed a piece of bone four inches by nearly two. Another fracture extended four inches in length. Slight fever for a few days is recorded, with no unfavourable symptoms and the wounds healing by first intention. Two or three months afterwards patient is reported as well, with loss of nearly one-half of frontal bone on the right side, besides a long opening in left parietal.

A recovery almost equally extraordinary, after operation for strangulated hernia, is reported by the same gentleman. In this case, also, the patient was a negro, but not young.

4. The *Medical Society of the District of Columbia* still adhere to their excellent plan of printing only discussions and cases, and excluding all orations and addresses.

A case of *Red Softening of the Middle Lobe* of left cerebrum, accompanied with aphasia, gave rise to an interesting debate. The disease was found to extend slightly into the posterior lobe, but not at all into the anterior; and involved white substance principally. Patient was a German, and lost first his ability to speak English, and later the use of his mother-tongue. Intelligence appeared intact.

A somewhat full discussion was occasioned by a reported case of *Addison's Disease*.

In a case of *pyonephrosis*, the diseased mass weighed six pounds, and contained four pints of pus, with two calculi.

A singular and somewhat dubious case is reported as an instance in which a displaced colon compressed and strangulated the stomach at the cardiac end. Unfortunately the examination which gave rise to this diagnosis was made four days after burial, when the organs were distended with gas.

The connection between *biliary calculi* and *hepatic abscess* was the subject of considerable debate.

A terrible case of *hydrophobia* in a child of four years gave rise to free expressions of opinion concerning the disease.

5. *Eastern Medical Association of North Carolina*.—From the report of the executive committee of this new society, we learn that its organization was due to a determination on the part of the better portion of the profession to make a vigorous and united effort to withstand and arrest prevailing tendencies towards professional demoralization. The report speaks plainly and boldly, revealing certainly a lamentable decadence of true medical spirit and morality. Open violations of many articles in the Code of Ethics are stated to be of

constant occurrence. We fear, too, from some indications noticed, that such sins are by no means confined to the more obscure or impoverished practitioners. For the boldness and energy with which this new organization is striving to infuse a better spirit and begin a reformation, much credit is due.

The President, Dr. Chas. Duffy, Jr., delivered an annual address, in which he set forth with great clearness and good sense the directions and methods in which members may contribute to the prosperity and usefulness of the Association, and to the advancement of medical science.

Dr. Attmore contributed a paper upon *Acute Aural Catarrh*. There are two or three other brief articles requiring no special notice. B. L. R.

ART. XXXI.—*Cyclopædia of the Practice of Medicine*. Edited by Dr. H. VON ZIEMSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. I., *Acute Infectious Diseases*, by Prof. LIEBERMEISTER, of Tübingen; Prof. LEIBERT, of Breslau; Dr. HÆNISCH, of Greifswald; Prof. HEUBNER, of Leipzig; and Dr. OERTEL, of Munich. Translated by R. H. Fitz, M.D., and Charles P. Putnam, M.D., of Boston; Arthur Van Harlingen, M.D., of Philadelphia; James T. Whittaker, M.D., of Cincinnati; Edward W. Schauffler, M.D., of Kansas City; and Francis Delafield, M.D., Horatio Bridge, M.D., Thomas E. Satterthwaite, M.D., Lewis A. Stimson, M.D., J. Haven Emerson, M.D., and Normand Smith, M.D., of New York. ALBERT H. BUCK, M.D., New York, Editor of American edition. 8vo. pp. xvi., 708. New York: William Wood & Co., 1874.

THE *Cyclopædia of the Practice of Medicine*, if it meets with better success than has attended the recent publication of a very similar work in England, will consist, when completed, of fifteen volumes, containing "a series of treatises written," to use the words of the preface, "by men who are skilled in the different departments of medicine," and will unquestionably form the most valuable compendium for reference in the English language. We think we have sufficient warrant for this assertion in the very creditable manner in which the writers who have contributed articles to this volume have done their work; and the names of the physicians who are engaged upon the succeeding volumes, are a sufficient guarantee that they will be of equal excellence. The volume has the fault—to a certain extent inseparable from the nature of the work—of being much too heavy to hold in the hand while being read without producing fatigue, and we therefore regret that the publishers did not select a style of printing somewhat like that adopted in *Reynolds' System of Medicine*, which would have reduced the bulk of the volume at least one-fourth, and which might also have enabled them to have issued it at a slightly diminished price. It gives us great pleasure cordially to endorse the American editor's opinion in regard to the admirable manner in which the various articles have been rendered into English.

The diseases treated of in this volume are typhoid, typhus, relapsing, and yellow fevers, cholera, the plague, dysentery, and diphtheria. As it is impossible, within the limits of a brief notice, to do more than refer to the articles on most of these diseases, we shall attempt an analysis of two of them only, selecting for this purpose that on typhoid fever by Prof. Liebermeister, and that on diphtheria by Dr. Oertel.

Prof. Liebermeister prefaces his article on typhoid fever by some remarks on the nature and causes of infectious diseases, in which he takes occasion to announce his belief in the theory of a *contagium vivum* as the cause of this class of affections. As early as 1865, he says, he thought himself justified in making the prophecy that this theory would soon be the prevailing one, and that, under its influence, investigation would take directions that would probably lead to results of the greatest importance—a prophecy which he regards as having been actually fulfilled, in part, during the last few years; for it is now generally admitted that it represents a view “which points more clearly than any other to order in the chaos of facts.”

In addition to the more usual division of infectious diseases into contagious and miasmatic, the author makes a third class, which he calls the miasmatic-contagious, and in which he includes typhoid fever. “This disease,” in his opinion, “is not contagious in the proper sense of the word, for it is never transmitted by direct contact. It is not purely miasmatic, for external conditions alone are not sufficient to produce it. The presence of a person suffering from this disease, or of substances derived from such a person, is necessary. The poison is propagated continuously. It travels from the diseased individual to the localities which are favourable for its growth and multiplication, and from these localities again into the human body.” In other words, a patient with typhoid fever may be treated in a general ward, provided it be well ventilated, without danger of the disease being contracted by the nurses, or those who are brought in contact with him, or by the other patients. Moreover, while there can be no doubt that the specific poison is contained in the feces, these appear to be incapable of disseminating the disease when first passed; and yet it is equally certain that when added to decomposing matter, or when contaminating drinking water, they have often been the only recognizable cause of infection. The author, therefore, concludes that the poison causing typhoid fever has to undergo a development not only inside, but also outside the body. He accordingly ranges himself with those who believe that no matter how foul a privy or sewer may be, the emanations from it, provided it contains no dejections from typhoid fever patients, are without power to cause the disease in a healthy individual subjected to their influence. They are not innocuous, it is true, for they may give rise to gastro-intestinal irritation, as well as to other conditions, but never to typhoid fever.

He discusses at some length Pettenkofer and Buhl's theory in regard to the connection of epidemics of typhoid fever with variations in the height of the water-springs; the latter having shown that in Munich, as a rule, while the water steadily rises, typhoid decreases; and that, while the water sinks, typhoid increases. This he explains in the following way: “When,” Buhl says, “the water-level sinks, the layers of earth, saturated with water and organic substances, which are left exposed to the air, undergo extensive changes of a putrefactive character. When the water rises, these layers of earth are again covered, decomposition stops, and the products of previous decomposition are covered with water.” So far the author agrees with Buhl and Pettenkofer, but beyond this point his views diverge from theirs. They hold that the typhoid poison passes from the earth into the air, and is inspired into the human body. Prof. Liebermeister, on the other hand, teaches that “the lower the water is, the greater must be the proportion of solid matters dissolved or suspended in it. In localities where typhoid fever is endemic, where the specific cause is in the earth, or constantly soaking from the privies into the earth, this poison must be relatively more abundant in the water the lower the latter is. Much also of the matter which drains from the surface

into springs is washed away when the latter are high before it can settle to the bottom." There is, moreover, evidence, he says, that it is only in the immediate neighbourhood of masses of decomposing matter that the typhoid poison exists in the air in sufficient quantities to poison the air, which would hardly be the case were Buhl's theory the correct one. "A man," the author adds, "who avoids breathing the exhalations of privies and sewers, who does not handle linen foul with typhoid dejections, who does not drink unboiled water from infected springs, is as safe in a place where typhoid epidemic is raging as in one where not a case of the disease exists. The typhoid fever is not acquired in the streets, nor in houses of which the privies are not infected."

When speaking of the treatment of typhoid fever, Prof. Liebermeister says that there are but two remedies which appear to him to have any specific influence on the disease, viz., calomel and iodine. He formerly gave the first of these in doses of from $7\frac{1}{2}$ grains to half a scruple, repeated three or four times in the course of the twenty-four hours. Iodine he has used either in the form of the iodide of potassium, in doses of from a scruple to a drachm during the day, or in solution; one part of iodine being dissolved with two parts of the iodide of potassium in ten parts of water. Three or four drops of this solution were given in a glass of water every two hours. The results of these treatments are shown by the following: In 377 cases of typhoid fever non-specifically treated, the mortality was 18.3 per cent. In 223 treated with calomel, it was 11.7; and in 239 treated with iodine, it was 14.6. Much better results than these have been attained by means of the antipyretic treatment, and especially by means of that form of it which is generally known as the cold-water treatment. Whenever the thermometer in the axilla of a typhoid fever patient indicates a temperature of 102.2° , Prof. Liebermeister orders him to be placed in a cold bath of 68° , and kept there for at least ten minutes. He is then to be wrapped up in a dry sheet and put to bed, lightly covered, and given a glass of wine. In very severe cases it is necessary to repeat the baths every two hours, so that twelve baths are given every twenty-four hours. In some instances that have occurred in the hospital at Basle, the number of baths required by a patient during his entire illness has exceeded two hundred.

Quinia has been also in the author's hands a valuable antipyretic remedy, and when given in sufficiently large doses will often obviate the necessity for the frequent use of cold baths.¹ The high estimate which he places upon this drug in the treatment of this fever will be apparent from the following quotation: "Yet," he says, after giving it as his opinion, that it would be wrong to treat a severe uncomplicated case of typhoid fever without the systematic abstraction of heat, "if I were forced to the unpleasant alternative of adopting only one or the other of these two means—cold water or quinine—I should, in the majority of cases, choose the latter." The comparative results of what is called an indifferent treatment, and of the antipyretic treatment carefully carried out, are shown by the following figures: In 1718 cases treated before the use of cold water was introduced, the rate of mortality was 27.3 per cent. In 1121 cases treated since its introduction the rate of mortality was only 8.2 per cent.

Some objections have been made to the cold water treatment. It has been said to increase the frequency of hemorrhage from the bowels, of perforation,

¹ Prof. Liebermeister recommends very large doses of this medicine, as much as from twenty-two to forty-five grains being administered in the course of an hour. He prefers to give it in powder, prescribing $7\frac{1}{2}$ grains every ten minutes until the desired amount has been taken.

and of relapses. Prof. Liebermeister shows, by a recourse to statistics, that the frequency of intestinal hemorrhage has materially diminished under the cold-water treatment, and that nothing conclusive has yet been established with regard to its influence on the frequency of perforation. While admitting that it appears to favour the occurrence of relapses, he thinks that this is not to be ascribed to any inherent defect, but rather to the fact that a large proportion of severe cases, in which, of course, patients are most liable to this accident, recover under it than under any other form of treatment.

We cannot close our notice of this article without calling attention to the very meagre diet Prof. Liebermeister allows his patients. The recommendation of mucilaginous barley-water, thin oatmeal gruel, and the like, combined with not very strong meat broth, and with diluted milk, as the most suitable nourishment, seems like a tendency to return to the gum-water of our forefathers. Unquestionably there are physicians who run to excess in the matter of food; but, on the other hand, we should regard the chances for life of a patient in this country as slim indeed, if allowed in the beginning of his attack no better fare than this.

Dr. Oertel's views of the pathology of diphtheria appear to have been largely influenced by the fact that we owe to him and to Hueter the discovery that diphtheritic membranes, the subjacent tissues, and even the blood itself, contain in great number vegetable organisms, or bacteria, to which he gave the name of micrococci; these organisms being, in his opinion, the cause and not a mere accidental result of the disease. He regards diphtheria, therefore, as a local disease in the beginning, but having a tendency to become general in consequence of the infection of the blood. The reasons which he gives for this opinion may be briefly stated to be as follows: 1. The peculiar manifestation of diphtheria occurs earliest and most constantly on those portions of the mucous membrane over which the air in respiration must sweep, and which most easily come in contact with an infecting agent, conveyed by articles used in eating or drinking, or in some other way; 2. Diphtheria fixes "itself at the point of inoculation—the centre of infection, if we may so call the part first attacked—and radiates from that place throughout the whole body." This is a fact which has been established by the author's experiments upon animals; no matter in what part of the body the poisonous principle of the diphtheria may have been introduced, the first manifestations of the disease are observed at the site of the inoculation. In this respect diphtheria differs strikingly from glanders, in which the nasal mucous membrane is invariably affected.

The micrococcus is a variety of the bacteria, being round in shape. When brought in contact with the mucous membrane, or with an abraded surface of skin, it excites an inflammation which may vary in degree. Thus in some cases it presents itself under the form of catarrhal inflammation, in others under that of croupous; while in a third set of cases the irritation is so great, or the powers of resistance so slight, that gangrene is produced. In any form septic symptoms may occur in consequence of the passage of the micrococci into the blood, but these are of course most likely to supervene in the severer forms. These micrococci seem to have the power of diffusing themselves to an immense extent, for they have been found in the kidneys, in the lymphatic glands, and the tissue surrounding them—many of the lymphatic ducts being plugged by them—and even in the membranes of the brain and spinal cord, as well as in almost all the tissues of the body.

In addition to the capillary hemorrhages which have been generally described as among the lesions of diphtheria, Dr. Oertel describes certain alterations in

the nervous system which are not without interest, since they throw some light upon the pathology of the paralysis which is so apt to occur as a sequela of this disease. In one case Buhl found, he says, "that the spinal nerves were thickened at the roots, that hemorrhages had taken place, and that the sheaths of the nerves, and here and there also the strips of connective tissue running between the bundles of nerve-fibres and the ganglion-cells of the sensitive roots, were filled with lymphoid nuclei and cells. That such infiltrations are also present in the further peripheral course of the nerves is not improbable, still no direct observations upon this point have been published." "Buhl thinks," he continues, "that the scantier and smaller localized accumulations of nuclei and cells which are produced in the lower grades of infection are absorbed again, after undergoing fatty degeneration, without having made themselves particularly noticeable; but that the more numerous and larger collections of the higher grades are followed by a perceptible thickening of the connective tissue. When these growths proceed to a further development into connective tissue, the more or less marked distension of the fresh connective tissue at first disappears, the tissue contracts, and consequently embraces circularly the sheaths of the nerves and the bundles contained therein. Finally, it must be borne in mind that, as a result of absorption, the thickest and most contracted cicatrix becomes later again looser, more pliant, and more movable, that is, the connective becomes normal; consequently, according to Buhl, the nerve symptoms appear when the constricting effect of the thickening of the connective tissue begins, they persist while it lasts, and disappear finally when the thickening diminishes." Much in the above quotation is pure hypothesis, not sustained as yet by a sufficient number of observations to justify us in unhesitatingly adopting it. It is a theory, however, which we admit explains to our mind the occurrence of paralysis at a time when the patient is often apparently fully convalescent from the original disease much better than that which attributes it to the direct effect of the poison. Other marked changes are also found in the spinal cord corresponding in character with those which are observed in disseminated myelitis.

To set up a rapid and abundant suppuration by which the fibrinous exudation may be replaced by a purulent one, the author regards as the most important indication presented by this disease. This is best done by causing the patient to inhale steam. In order that these inhalations may be of service they should not only be frequently repeated, but long continued—as often as every half hour, for a quarter of an hour at a time. An effort should also be made to cause the destruction of the membrane, especially in cases where the larynx is invaded, by various chemical solvents; but these should not be alone relied upon, for they can never be used sufficiently strong to kill the parasite, and consequently are without power to prevent the reformation of the membrane. Remedies to meet the indication of opposing septic infection and general poisoning of the system may also be employed. The most suitable of them are alcohol, freshly prepared and properly diluted chlorine water (containing fifteen to thirty per cent. of chlorine water), solutions of permanganate of potash, one and a half to two and a half grains to the ounce, and of carbolic acid two and a half grains to the ounce, or where this cannot be borne, a like solution of oil of thyme in equal parts of spirits of wine and water. All these substances are, however, not suited for inhalation on account of their concentration, and should therefore be only used as gargles. The author thinks cauterization, the use of astringents, and efforts at mechanical displacement more likely to do harm than good. Cooling and antifebrile medicines should be prescribed at first, but whenever the patient's strength begins to fail it should

be sustained by tonics and stimulants. In fact the general treatment the author recommends is very much the same as would be employed here. We find him, however, cautioning us against the use of strychnia in the management of the secondary paralyses.

J. H. H.

ART. XXXII.—*Inflammation of the Lungs; Tuberculosis and Consumption.* Twelve Lectures. By Dr. LUDWIG BÜHL, Professor of Pathological Anatomy and General Pathology in the University of Munich, etc. etc. Translated by permission from the Second German Edition. By MATTHEW D. MANN, M.D., and SAMUEL B. ST. JOHN, M.D. 12mo. pp. x., 161. New York: G. P. Putnam's Sons, 1874.

WE know of at least one translation of a German work, recently issued from the American press, which might be read without a suspicion being entertained that it had originally been written in another language. There are others, however, and unfortunately these are the more numerous, in which too much of the original construction and so many foreign idioms have been retained that it is a task to read them. To the latter class the book belongs the title of which heads this notice—containing, as it does, many sentences unintelligible to any one unfamiliar with German. There are a few, indeed, which would puzzle even one possessed of a fair knowledge of the language. What, for instance, do Drs. Mann and St. John understand by the expression, on page 21, "It stipulates no phthisis;" or what do they mean when they say on page 40 that interlobular pneumonia "establishes itself between the lobules of the latter (the parenchyma) in lines diffusely obliterated and connected to form a plexus dividing the pleura in a certain sense into territories. etc." Imperfections of this kind render the book less valuable, as well as infinitely more difficult to read.

Prof. Buhl is well known as the author of the Infection Theory of Tuberculosis—a theory which is best known in this country through the writings of Niemeyer, and which, if it has not met with universal approval, has been adopted by many of our best clinical physicians. In some other respects the views held by these gentlemen differ very materially, and notably so in regard to the form of inflammation of the lungs which is to be regarded as the forerunner of phthisis. It is well known that the latter holds that this may frequently be traced back to catarrhal pneumonia—the former, on the other hand, teaches that strictly speaking there is no such thing as a catarrhal pneumonia, because, the air cells not being lined with an epithelium similar to that found in the bronchial tubes, an inflammatory process cannot extend from the latter into the former. It is true that in many cases of capillary bronchitis the air cells are filled with catarrhal products, but these do not originate in them but in the adjacent bronchial tubes. We have already said that Prof. Buhl denies the existence of a true epithelial lining of the air cells. When speaking on this point, he says that it has more the character of a "lymphatic endothelium spread out upon the inner surface of the alveolar wall."

"This view," he continues, "is sustained by the fact that the shape and size of the cells are entirely different from those of the bronchial epithelium, while, on the other hand, the resemblance in shape to that of endothelium is scarcely to be mistaken, as Ravier has already insisted. The lack of continuity, too, observed by many histologists, finds an analogue only in the endothelium of a serous surface. The bronchial epithelium consequently passes over into the

alveolar endothelium, as the tubal epithelium into the endothelium of the peritoneum. The experiments of Sikorsky furnish a convincing proof of this, since from them it appears that there exists in the alveolar wall a plexus of lymph vessels consisting of canals and stellate connecting knots, and that these knots communicate by means of fine openings with the cavity of the lung alveolus. Some may consider the alveolar cavities as broad lymph spaces containing air, and having a lining endothelium—the latter being wanting in the lymph plexus of the alveolar walls.”

We have made this long extract because we think it will enable our readers to comprehend better than they otherwise could do the author's views of the pathology of phthisis and tuberculosis.

In addition to the croupous and catarrhal forms of pneumonia, Prof. Buhl recognizes another form which he calls desquamative or parenchymatous pneumonia. This differs from what has usually been described as interstitial pneumonia, inasmuch as the development of connective tissue and subsequent cirrhosis of the lungs is not the only result of the inflammatory process. In the beginning the parenchyma of the lungs is much swollen. This gives rise to a shedding and to an increased production of the endothelial cells of the alveoli. To such an extent does this take place that they may be detected microscopically in the sputa. If the disease continues there is a tendency to the development of connective tissue, and its further course will very much depend upon which of the two processes becomes the predominant one—in one case cirrhosis being produced, in the other, if resolution does not occur, either fatty or caseous degeneration. In regard to the last, the author says that it is caused by the cutting off of the supply of blood to a part of the lung through the swelling of the alveolar walls, and of the stroma containing the vessels. This swelling is due to “a compact, gelatinous, albuminous, plastic infiltration, with development of spindle-shaped and stellate cells,” which must of course exercise considerable pressure upon the vessels. In addition to this there is also “a development of cells with exuberant small shining nuclei, accompanying the finest arterial twigs externally, seated in their adventitia, and causing this to swell up into lumps by reason of its irregular force, sometimes losing itself diffusely, and again rising up diffusely.” On the other hand, “pus corpuscles or their remnants are nowhere to be found, or at most there are traces of them in the lung parenchyma, probably carried over from the bronchi.” It is the tissue itself which, in the author's opinion, undergoes first necrosis and then caseous degeneration. It will be remembered that Niemeyer teaches that the arrest of the circulation is due to the pressure of the accumulated cells within the alveoli, and that the appearances of cheesy pneumonia are due largely to the caseous degeneration which these cells undergo. He also holds that occasionally, although not frequently, croupous pneumonia may be a predisposing cause of phthisis. This Buhl most expressly denies, as he does also for catarrhal pneumonia.

According to the author, a tubercle “has its origin in the connective tissue which contains the juice canals and lymphatics, and particularly in the adventitia of the finer arteries and its lymph-sheaths, and from these points it emerges a well-organized structure. It shows in its finer organization an analogy with the lymphoid organs of the body, such as the Malpighian corpuscles of the spleen, and the lenticular glands of the intestines.” The elements which compose it, he continues, “can be developed just as well from the connective tissue cells as from the endothelium, and at one time they take the form of cytoïd corpuscles (young connective tissue cells), at another that of giant cells, and again they occupy a middle position in the form of endothelial-like cells.”

He therefore places himself among those who consider a tubercle to be a lymphomatous tumour—he considers it, however, a peculiar kind of lymphoid formation. Among its peculiarities are mentioned the presence in its earlier stage of one or more giant cells, the entire want of vessels, the later solidification of the protoplasm of the giant cells, that is, its horny metamorphosis, and the fibroid changes in the connective-tissue capsules.

The reasons which Prof. Buhl gives for believing that miliary tuberculosis is a disease due to specific absorption and infection are as follows: 1. The almost constant presence, in acute miliary tuberculosis, somewhere in the body of one or more centres or masses of caseous degeneration, the results of previous inflammation. 2. In cases where infection has occurred, the cheesy nodes are not entirely encapsulated, that is, they are not inclosed on all sides by firm fibroid tissue. When so inclosed the caseous masses may be regarded as innocuous, because, while the hindrance offered to absorption by cirrhosis and the limiting cicatrization is not absolute, it is still very great. The pus, which is derived, the author says, from the surface of a mucous membrane and retained in the mucous membrane canals, is not in a condition to generate infection, even where it has undergone complete cheesy degeneration. Catarrhal pneumonia and bronchitis, croupous pneumonia and bronchitis, are scarcely able to awaken a miliary tuberculosis. On the other hand, the cheesy masses in the connective tissue, extending to a certain degree by their prolongating into the lymphatics and bloodvessels, may certainly give occasion to infection before the connective tissue has undergone cicatricial hypertrophy. 3. The presence of tubercles in parts of the lung immediately adjoining the seat of caseous masses is evidence in favour of the absorption and infection theory. 4. Their presence in various parts of the body proves a general infection of the blood. 5. Another important argument in favour of this view is based upon the situation of the miliary tubercles in the connective tissue containing the lymphatics of the organ, and the analogy in their histological formation to normal lymphoid organs. 6. Tuberculosis is not an isolated instance of the production of disease by infection; we find analogies in other diseased conditions, in miliary carcinoma, for example. 7. In addition to these points, the fact that tuberculosis can be conveyed from one human being to another must be regarded as favourable to the infection theory. By this is not meant the inheritance of the disease by a child from its parents, but the immediate communication through contagion, both that which takes place from one part of the body to another, and that from one individual to another. 8. Tuberculosis, as a rule, does not coexist with any other disease derived from infection. 9. The final, and at the same time most weighty, argument which he adduces is that which rests upon the results of inoculation, proving as they do that tuberculosis can be conveyed to animals.

In about ten per cent. of the cases of tuberculosis which have come under Prof. Buhl's observation, no cheesy nodes could be discovered, and these he explains by supposing that they have been caused by a peculiar form of inflammation which he calls tubercular inflammation, a process "which not simply by chance, but by its own inherent qualities, possesses the property of necessitating a production of tubercle-lymphoma, and of having, as in the third case, the appearance of the lymphoma coincident with the inflammation, and of having them confined to the tissues in which the inflammation takes place." If the tubercle is really a lymphoma, and the weight of evidence is in favour of this view, and if it may be developed either from the endothelium of the alveola walls, or from the connective tissue uniting these, we can readily understand that inflammation will occasionally result in their production without a previous

infection of the blood having taken place. Tubercular pneumonia is in fact only a higher grade of genuine desquamative pneumonia, the localized expression of a general disease. "This general disease," the author teaches, "is the peculiar constitution, which if we wish to form a scheme according to the degree of intensity sometimes stops in its inflammatory exudation with the formation of spindle and stellate cells (called in the lungs pure genuine desquamative pneumonia); sometimes, however, it goes further, and adds to this a proliferation of the lymphatic endothelium (cheesy pneumonia); and this again carried to a higher degree is accompanied by a production of lymphoma (tubercular inflammation), and may, under very unfavourable conditions, finally run into a purulent infiltration (purulent peribronchitis and lobular suppuration)."

It will be perceived that while Niemeyer, Oppolzer, and others hold that phthisis may, in most instances, be traced back to an attack of catarrhal pneumonia, and that this generally arises from extension of an inflammatory process from the fine bronchial tubes into the air cells, Buhl asserts that the latter never takes place, and that the excessive production of the endothelial cells of the alveoli is the result of an inflammation seated in the interstitial tissue. But they all agree in recognizing, as the rule, an inflammatory origin for phthisis. Whether Buhl or Niemeyer is right as regards the particular form of inflammation, seems to us comparatively a very indifferent matter. Our own experience has led us to the conclusion, that the popular belief that a neglected cold has often been the starting point of consumption is correct, and we think a further confirmation of this opinion is to be found in the frequency of this disease as a sequel to measles, whooping-cough, and other morbid conditions, in which bronchitis is a more or less frequent complication. Nor are we able to coincide with Prof. Buhl in his opinion, that extravasated blood in the air cells is never the cause of inflammation of the lung. The fact that it may be so seems to us established both clinically and experimentally. Any one who will take the trouble to note the temperature of his patient will find that it is higher two or three days after a hemorrhage than before it. In a communication to the June number of Virchow's *Archiv* for 1872, Dr. Julius Sommerbrodt¹ shows the consequence of injecting blood into the air cells through the trachea is catarrhal pneumonia.

In addition to the topics alluded to above, one lecture is devoted to the consideration of peri-bronchitis, which want of space prevents us from noticing.

Prof. Buhl has a high reputation as a pathologist, and his book is the fruit of much work and thought.

J. H. H.

ART. XXXIII.—*Reports of American Hospitals for the Insane.*

MANY of these reports contain little beyond the modest record of continued usefulness, and therefore call for no criticism. In some of them, however, we find ideas or statements upon which it may be interesting to comment.

As usual, the report of the *Pennsylvania Hospital for the Insane* at Philadelphia, for the year ending December 31, 1874, is full of good sense and sound doctrine. In speaking of warming and ventilating hospitals of this class, Dr. Kirkbride maintains that a forced ventilation is the only kind always efficient and trustworthy. His views on this subject are well considered and mature. As proof of the extraordinary neglect and indifference with which this most

¹ See Amer. Journ. of Med. Sci. for Oct. 1872.

important matter is treated by builders, as well as the public, he points to the often-witnessed fact of edifices being half built before any plan is adopted to furnish air and warmth. Not a spadeful of earth should be turned till this vital provision is arranged to the minutest detail.

The constantly growing need of additional hospital accommodation is adverted to, and the duty and expediency of providing it is urged. The Doctor deals sturdy blows at cheap construction, so called. First cost, he says, may be low, without ultimate cheapness; and a heavy outlay at first may prove the best economy at last. For the insane, temporary structures possess no advantages, and are almost certain to be ill adapted to their needs. All increase in first outlay which tends to make the buildings really, as well as nominally permanent, is true economy. Wooden structures, or ones whose interior is largely composed of wood, are in danger of destruction by fire, and are constantly requiring expensive repair and renewal.

Dr. Kirkbride believes that our State will never find reason to regret the outlay made upon its substantial and well-fitted hospitals. First-class provision has been made so far, and it is to be earnestly hoped that no delusive promptings of a false economy will ever prevail upon her to erect structures of which her citizens shall have reason to be ashamed.

A memorial addressed to the last Legislature concerning the wants of the insane is here printed. The needs presented are: additional accommodation for the insane in general; special provision for insane convicts; and the continuance of the custom of allowing pay-patients to be received at low rates of board in the State hospitals, thereby bestowing the benefit of treatment without wounding self-respect, as we have elsewhere explained.

Asylum for the Relief of Persons deprived of the Use of their Reason, Frankford, Pa. Year ending March, 1874.—Much has been done during a few years past to keep this venerable institution abreast with its more modern companions. Both exterior and interior of the principal buildings have been rendered much more attractive by an additional top story, or Mansard roof, by complete repainting, and by enlarging and lowering the windows. New buildings have been erected for excited patients, and for purposes of amusement and recreation. The grounds, naturally beautiful, and possessing noble trees, have been much improved. These and other changes have done much to promote the curative work of the hospital, and to add to the enjoyment of its inmates.

From a population averaging eighty-four, only two deaths occurred in the year. No suicide has occurred within its walls in nearly twenty years. Dr. Worthington deprecates the popular disposition to look upon hospitals chiefly as places of confinement. They should rather be regarded as means for the restoration of health, and never as places of imprisonment or punishment.

In this modest asylum some eighteen hundred patients have been treated in all the years of its activity, which have been nearly three-score. Besides the large number relieved and made more comfortable, nearly eight hundred have been restored to health. Through the bounty of its founders, contributors, and benefactors, this good work has been done at charges to the patients much below the actual money-value of the board and care provided. Inasmuch, however, as the low rates are still beyond the unassisted means of some, \$3000 from the income of permanent funds has been used in helping to pay the bills of forty-three patients during the past year. We cannot but think that if the usefulness and truly charitable character of such hospitals were generally understood, they would share much more largely than at present in the gifts of the wealthy and generous.

Butler Hospital for the Insane, Providence, R. I. Year ending December 31, 1874.—This, like the institutions under Dr. Kirkbride and Dr. Worthington, is purely corporate, and wholly unconnected with the State. Dr. Sawyer's space this year is completely occupied with the description of improvements finished or in progress. The new wing, contemplated at date of previous report, is already roofed in and provided with steam-heating apparatus. Connection has been made with the new municipal water-works, and the whole premises are lavishly supplied with a water of remarkable purity, at such a pressure as forces a stream through hydrant and hose seventy feet high in the air. This, added to previously existing safeguards of every known kind, renders conflagration almost impossible.

Through the wise beneficence of its trustees and other friends, this hospital has been constantly adding to its means and appliances for relieving and curing its patients. While furnishing a very high grade of accommodation to the wealthy, this institution affords care and treatment to the majority of its patients at rates below the average cost of mere maintenance. This, independent of interest on capital invested, amounts to \$7.83 per week for each patient.

The new wing now in progress will add thirty beds, raising the capacity of the hospital, without crowding, up to one hundred and seventy or more.

Northern Ohio Hospital for the Insane, near Cleveland. Year ending November 15, 1874.—This hospital, like some near at hand, suffers from hordes of idle visitors, coming to be amused and excited. Dr. Slusser speaks sensibly and feelingly of the mortification caused to some patients, and the serious injury done to others, by the thoughtless crowds who trample through the wards, agape with vulgar wonder, and full of impertinent curiosity. The morbid taste which leads the general public to visit hospitals and view the insane in the same spirit in which they crowd around a cage of monkeys at a menagerie, ought surely not to be gratified. It is certainly the duty of a State to protect its afflicted citizens from such cruel humiliation and such grave injury.

King's County Lunatic Asylum. Year ending July 31, 1874.—Here, as in almost all similar institutions, we find complaint made of the crowded condition of the wards. Chances of recovery are diminished, the danger of accidents and assaults increased, and the general comfort of the house impaired by over-population. Converting day-rooms into dormitories is, as here stated, every way objectionable.

We are sorry to learn that Dr. Edward R. Chapin has resigned his superintendency. He has faithfully discharged the duties of this very responsible and laborious position for sixteen years.

State Lunatic Hospital of Pennsylvania, at Harrisburg. Year ending September 30, 1874.—The trustees and the superintendent unite in urging upon the public the duty of the State to provide hospital accommodations for all its insane. So long, however, as some must still remain in almshouses, the communities around them are asked to see to it that they are not neglected or ill-treated.

The trustees again refer to the unjust censures which they have received for admitting patients whose friends preferred to pay a low rate of board for them rather than incur the stigma of pauperism. People of humble means cannot afford to support their insane relatives in the corporate hospitals, like the one presided over by Dr. Kirkbride, for instance. To the State hospitals they have a right to look, and it is both justice and sound policy for the State to provide the needed treatment. To ignore the honourable sensitiveness of

families with limited means, by insisting that they shall enjoy hospital treatment only by becoming paupers, would be both extremely unwise and outrageously cruel. We hope the day will never come when the industrious, self-respecting working-man shall be refused the privilege of paying the lowest cost price for the maintenance of wife or child at the State hospital. The inevitable result would be the keeping of this class of the insane at home during the curable period, and at last throwing them upon the counties for support when all hope of cure was past.

Northern Hospital for the Insane, Oshkosh, Wisconsin. Year ending September 30, 1874.—The number of patients applying for admission to this new institution has proved much greater than was anticipated. Its completed wards are already badly crowded. Dr. Kempster takes the highest and soundest ground as to the necessity and the character of hospital accommodation. He believes it the duty and true policy of the State to make provision for all its insane, curable and incurable. He is not a believer in cottage systems, nor in cheap construction, but thinks that in hospitals as in other things the best is the cheapest.

Dr. Kempster directs attention to the sin and folly of marriage on the part of persons with insane tendencies. Little effect as warnings of this kind apparently have, we yet believe they should be oftener uttered in reports of this sort, since here they are most likely to reach those who need them—the relatives of the insane.

The fact is mentioned, with pardonable pride, that systematic work is here pursued with the scalpel, the microscope, and photo-micrography. By this sort of investigation it is that we are to make progress in the knowledge of brain-disease and its treatment. Dr. Kempster has been a pioneer in this important work, and deserves much credit.

State Lunatic Hospital, Northampton, Mass. Year ending September 30, 1874.—Dr. Earle has some extremely just remarks concerning the impropriety of receiving inebriates in hospitals for the insane. The influence exerted upon other patients by inmates of this class is very frequently decidedly injurious. As a rule, they foment discontent, and interfere with good discipline. Inebriate asylums are a great want of the age. Separate asylums for epileptics also are here advocated with much cogency.

In considering the great question how to provide for the rapidly increasing numbers of the insane, we think the doctor has fallen into some errors. He advises the building in different parts of the State of hospitals to accommodate two or three hundred patients. The objection to the comparative smallness of these establishments—their greater cost per patient—he boldly denies. He says that two great hospitals now building will cost \$2000 to \$2500 per head. And then he points to a group of buildings erected as an extension or addition to the original main establishment at Ovid, N. Y., and costing \$500 for each patient. Allow, he says, \$500 more for “such modifications of architecture and of internal arrangement, together with additional fixtures, furniture, and ornamentation” as would be required for a better or more varied class of patients; and he seriously presents this as a demonstration that small and fitting hospitals for the insane can be provided at \$1000 for each inmate. Nothing is said about the cost of land, although a large farm is always deemed necessary to a hospital for the insane. No hint is given to his readers that the Ovid group had its land, its bakery, laundry, and administrative department already provided. Yet it does not appear that he had in mind the fact that these things would need to be included in his estimate for new, small hospitals. For he expressly indicates, in words above quoted, what the additional \$500 is

for. And that it would all be needed as indicated seems certain, when we remember that the Ovid buildings are but little divided into separate rooms, are intended for the pauper insane alone, and receive only a selected class of the entire population of the hospital; while Dr. Earle's proposed establishments are to receive both pay patients and paupers, curable and incurable, quiet and noisy, destructive and peaceable, filthy and cleanly.

That on many accounts hospitals of the size recommended by Dr. Earle are preferable, there will be few to doubt. That they can be provided as cheaply—patient for patient, and accommodation equally good—as institutions of double capacity, is contrary to the belief of all best fitted to judge, except our author. To convert them to his views upon this matter, will require much better logic and much happier illustration than are here employed.

B. L. R.

ART. XXXIV.—*Registration Reports.*

1. *Thirty-second Report to the Legislature of Massachusetts relating to the Registry and Return of Births, Marriages, and Deaths in the Commonwealth, for the year ending December 31, 1873.* Prepared under the direction of the SECRETARY OF THE COMMONWEALTH. With editorial remarks by F. W. DRAPER, M.D. 8vo. pp. ix., 80, clxi. Boston, 1875.
2. *Twenty-First Report upon Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the year ending December 31, 1873.* Prepared under the direction of JOSHUA M. ADDEMAN, Secretary of State. By EDWARD T. CASWELL, M.D. 16mo. pp. viii., 104. Providence, 1875.
3. *Fifth Annual Report of the Secretary of State of the State of Michigan relating to the Registry and Return of Births, Marriages, and Deaths, for the year 1871.* 8vo. pp. xxv., 376. Lansing, 1874.
4. *Nineteenth Annual Report upon the Births, Marriages, and Deaths in the City of Providence, for the year 1873.* By EDWIN M. SNOW, M.D., Superintendent of Health and City Registrar. 8vo. pp. 68. Providence, 1874.
5. *Report of the Health Officer for the City and County of San Francisco, for the fiscal year ending June 30, 1874.* By HENRY GIBBONS, JR., M.D., Health Officer. 8vo. pp. 71. San Francisco, 1874.

1. THE first eighty pages of this well-arranged document are filled with summaries and remarks; the remainder consists wholly of extended tables. The latter, as usual, present the facts of birth, marriage, and death, under almost every conceivable aspect in which they can be profitably viewed.

The Secretary of the Commonwealth says no more than truth when he reminds us that the State of Massachusetts and the cause of sanitary science have met with a severe loss in the death of Dr. George Derby. As editor of these Reports, and as Secretary of the State Board of Health, his labours have been most faithful, honourable, and useful.

The record of births in different counties continues to show a much larger proportion in the active and thriving districts than in the quiet and unprogressive communities. From the latter it has long been notorious that the young men emigrate in large numbers, seeking a career in the centres of wealth and activity.

The proportion of male births to female is as 106.9 to 100. This is not far from the relation which has obtained for years past.

The percentage of children born of purely native parentage has been steadily diminishing. Here, as elsewhere, larger families of children are born to foreign than to native parents.

There appeared during this year a very startling increase in the number of illegitimate births. The figures are more than double the average for fifteen years. No cause for this sad state of things is apparent, unless we attribute it to the poverty, idleness, and suffering, produced among a large class of young women by the great depression in manufacturing business existing during this and the previous year.

Marriages, as would be inferred from our remarks as to births, are less frequent in the quiet and unprogressive counties than in those containing a bustling and growing population. The month of November exhibits the maximum, and March the minimum of marriages, classified as to months. The occurrence in the former month of the time-honoured New England festival of Thanksgiving has, undoubtedly, an influence in this matter, as perhaps has also the coming of the Lenten season in the latter. At all events, the relation has been the same for many years.

Of bridegrooms over threescore years and ten, there were fifty-one; of brides only two had reached that age. One man died at the age of seventy-five, having begotten children by three wives, respectively fourteen, seventeen and three. His third marriage occurred when he was seventy years old.

The death-rate is less than for 1872, though still above recent averages. Epidemic prevalence of smallpox and of scarlet fever is the cause of this excess. The third quarter of the year has nearly 31 per cent. of the whole number of deaths, the excess being due principally to the summer complaints of children. Children of foreign parentage die at a tender age in much larger proportion than those of natives, thereby to a great extent counter-balancing the original excess in their number.

It is strange to find, in Massachusetts, of all places, the term "typhus," and not "typhoid," as the generic name under which are reported all cases of continued fever.

The mortality from consumption seems to have been slowly diminishing through the last score of years. Diminishing humidity of climate is here conjectured to be the cause of the change. May not an exacter and earlier diagnosis, and more judicious treatment, with perhaps more frequent removal of patients to a milder climate, have fully as much influence?

We are glad to learn that the late Dr. Derby has been succeeded by his associate and fellow-labourer, Dr. F. W. Draper, in the work of preparing and editing this important work. It is well that duties so difficult and momentous have passed into able and experienced hands.

2. We are sorry to learn that even in Rhode Island, which we have been accustomed to look upon as the model State in regard to registration, the soul of the compiler is sometimes sore vexed by incomplete returns. Nevertheless we believe the facts contained in these reports are much more than usually exact.

The proportion of male children to female, during twenty years, is 105.6 to 100. The variation in the ratio from year to year is, however, exceedingly curious. In 1873 it was 108.6, and in 1872, 100.9 to 100. In 1865 it was 112.9 to 100. In single counties the diversity for different years is enormous—as in Washington, for 1865, 88.1 to 100, and for 1868, 136.5 to 100. Among coloured children born in 1873 the ratio was 111.7 males to 100 females.

The allotment of marriages to different months is much the same as in the city of Providence, and in Massachusetts. November stands at the head; a considerable falling off occurs in December, with partial recovery in January, while March witnesses fewer unions than any other month.

Returns of divorces indicate that adultery, as a cause of separation, is comparatively more common in the rural districts than in the city of Providence. In the latter, desertion, failure to provide, drunkenness, and cruelty are more prominent as causes of divorce.

Five mothers, during 1873, gave birth each to her seventeenth child. During 17 years even that achievement has been far surpassed, there having been from 2 to 4 children recorded as eighteenth, nineteenth, twentieth, twenty-first, and twenty-second.

The monthly mortality is least in June, and next comes November. August, this year, shows the highest death-rate. This latter, however, not unfrequently occurs in July. Among the quarters of the year the third always bears a bad pre-eminence.

The deaths by consumption during the year number 580. Of these 328 were female. This excess mostly occurs in early and middle life, nearly disappearing at last. From 15 to 20 years, we have males 19, females 32; 20 to 30 years, males 67, females 115; 30 to 40, 48 and 63; 40 to 50, 35 and 39; 50 to 60, 28 and 27; 60 to 70, 22 and 24; over 70, 15 and 18. Viewing the records for a period of years, there seems to be a slight diminution in the mortality by this disease.

Pneumonia is somewhat more fatal among men than among women.

Scarlatina shows an absolute mortality larger than ever before, though not so large in proportion to all causes and to population as it exhibited four or five times since 1855. The variation in the proportion has been very great, being from more than ten per cent. of all deaths down to one-half of one per cent. More than half the fifteen hundred deaths by this disease in ten years past were children under five.

3. From some introductory remarks in the Michigan Report we learn that there is reason to believe that the returns of births are so inadequate as to require the addition of sixty or seventy per cent. to make them represent the truth. This disgraceful state of things is attributed to a provision of law whereby the births are not enumerated until months after they occur. Those for January are returned sixteen, and those for December five months after the event. Naturally many are forgotten or lost sight of, and more in the remote than in the recent months.

Whatever defects are possessed by the existing law, we believe that provision to be a good one which places registration under the management of the State Health Board. Dr. H. B. Baker, Secretary of the Board and Superintendent of Vital Statistics, would seem to be a zealous and efficient officer, if we may judge by the extent and variety of the tables here given, and by the judicious remarks interspersed.

In the births reported, the ratio of sexes is 110.29 males to 100 females. Where both parents are natives, the ratio falls to 106.09 to 100; and with both parents foreign, it rises to 116.15 to 100.

The tables present the recorded births under an extraordinary variety of aspects. Some of them can scarcely be understood, except by the practical statistician. One very interesting exhibit, however, is made to show the ratio of sexes of children born in many different States and cities. Some attempt is made to ascertain the obscure laws which govern this ever-varying relation.

The number of children born to native parents is much less, in proportion to population of adult age, than the number born to foreign parents.

Notwithstanding their liability to suffer a year's imprisonment, the clergy and justices of Michigan have officiated at one hundred and fifty-nine illegal marriages during 1871. The spectacle of gospel ministers marrying children, in open violation of law, is not an improving one. We believe Dr. Baker's suggestion to be a wise one—to require for valid marriage as strict an observance of legal forms as is required for the conveyance of real estate. Let the permission to contract marriage be placed under the sole charge of a civil officer, and the contract be as carefully recorded as deeds are.

The returns of deaths suffer from the same unfortunate cause of imperfection which we noted as affecting the birth reports. The same delay in enumeration exists, produces similar results, and calls for similar correction. By comparing returns with those of the United States census, it is found that in the remotest month nearly one-half the deaths fail to be returned under the State law.

The deaths reported are arranged and viewed under the most varied lights. It is very much to be regretted that so much care and skill, and such immense labour had to be exercised upon returns so very imperfect. Still, a remark made by the compiler is perfectly true, that for many purposes and under many aspects partial returns may be almost as valuable as complete ones. Much greater care, however, must be taken to avoid false inferences where such imperfections exist.

If the legislators of Michigan do not at once amend their registration laws, they will show themselves culpably indifferent to a most important interest of the State, and most inappreciative of the zeal, energy, and ability of their Superintendent.

4. Few people, probably, have any adequate idea of the difficulty and delicacy of good statistical work. To prepare and use tables properly, to reject the plausible but really illogical inferences which figures so often suggest, to perceive and make allowance for disturbing causes, and to judge at a glance where lies an absolute error in the returns—all this requires intellectual gifts of no mean order, with the addition either of long experience or of special training. To one who knows just enough of statistics to be aware of their frequent abuse and misinterpretation, there is great satisfaction in finding upon a title page the name of a compiler on whose accuracy, discernment, and sound judgment absolute reliance may be placed. We have before us one of these rare and happy instances. Dr. Snow has made registration, and the use of its facts, and sanitary science, the almost exclusive labour and study of his life for many years. For zeal and discretion in promoting accurate registration, and for skill in presenting results, he probably stands second to no man living in this country. To his agency is due in great measure the high position taken by his State and City as leaders in the work of thorough registration.

We notice a considerable diversity in the proportion borne by male to female births in different years in Providence. For the year 1873 it was 108.83 to 100. For the last twenty years the average was 105.4 to 100. In 1860, 1864, 1871, and 1872 the usual proportion was inverted, standing for these years in their order as follows: Males to females, 96.4 to 100, 97.3 to 100, 95.6 to 100, and 95.7 to 100. Yet in 1861 the males were to females no less than 118.6 to 100, and in 1865 113.8 to 100. It will be noticed that both these periods follow years in which the usual order had been changed. Among the coloured population, although

in eighteen years births fell short of deaths, yet of the children born 118.8 were males to 100 females.

The number of births from foreign parentage is, in proportion to population, very much larger than the number born to native parents. Both births and marriages, however, indicate a steady increase in the intermarriage of natives with foreigners.

The women who became mothers in 1873 had an average of 3.2 children each. Extending the computation over nineteen years the average is 3.44. The total number of children which these mothers might be expected to bear is estimated at 3.92. In single instances women became mothers for the first time at the ages of 41, 42, and 43. One woman bore her second child at 47. In the ten years previous, instances of maternity to the number of twenty-seven occurred at 47 to 50—four at the latter age.

Of two instances of triplets, one was the first child-bed of a mother aged 25 years; in the other the mother was 30, and had borne seven children previously. Of the plurality births in nineteen years, 58 per cent. were of foreign and 9 per cent. of mixed parentage.

Marriages for the year, and for nineteen years, are most frequent in November and October, and least in March. A falling off in December is thought to be due to certain rules in the Romish Church. Lent is thought accountable for the dearth in March; and we believe "Thanksgiving" has something to do with the November excess.

A comparison is suggested by Dr. Snow between the marriages of nineteen years classified as to nativity, and the births for eighteen years classified according to nativity of parents. The result upon bringing the averages together is certainly very significant and striking:—

	American.	Foreign.	Mixed.
Marriages	56.14 p. c.	30.86 p. c.	12.96 p. c.
Births	40.42	49.33	10.25

This table exhibits with perfect clearness the relative fertility of marriage when contracted between natives, foreigners, and between persons of different blood. The unions of foreigners are largely the most prolific, while mixed marriages are less so than the former, but still more so than purely native matches. From one year to another the relative number of the three classes varies very considerably; but in each class the relation of births to marriages is constant in character.

The proportion of native marriages varies rather curiously from year to year, but, on the whole, has changed very little in the nineteen years. But, looking at the whole term of years, we perceive that foreign unions have diminished, and mixed increased, though with singular temporary interruptions and reversals of the rule.

The average age of all decedents during 1873 was 27.77 years; those of American parentage averaged 33.27, and of foreign 22.24. This discrepancy, at first rather startling, is undoubtedly largely due, as Dr. Snow suggests, to the greater proportion of young children in the foreign population. Less favourable hygienic conditions, however, also undoubtedly exist. The averages for eighteen years are a small fraction less than for 1873. A table formed by setting down the average age for successive periods, each beginning at 1856 and ending at each subsequent year in succession—as 1856 to 1857, 1856 to 1858, 1856 to 1859, etc.—exhibits a very gradual increase in the age of decedents. But the differences between different years are curiously great. In 1867 the average of all dying was 32.72 years. In 1866 and 1868 also, the

average of American parentage was as high as in 1867 (36.85 and 36.54), but a want of correspondingly increased longevity in the other decedents prevented the total average from quite reaching 31 years. In 1856 the grand average was only 21.42, and continued more or less depressed till 1862. In 1864 and 1865 it again sank to 25.83 and 26.11; after which it kept considerably above the 18 years total until 1873.

As a rule the greatest mortality in Providence occurs in the third quarter of the year. Severe winter epidemics of scarlatina, measles, croup, and pneumonia have twice in nineteen years broken this law. The second quarter has usually the least mortality.

In speaking of the proportion of male to female decedents, on page 28, we believe a slip of the pen or of types has for once escaped correction. We cannot make sense of the passage as it stands. The general fact is that female decedents exceed in number those of the other sex—therein corresponding to the respective population, though a little in excess this year.

The difference in mortality among the young children according to parentage is very strikingly exhibited in a table which shows the mortality at successive age-periods, not only in absolute numbers, but in the percentage which decedents of each age bear to the total mortality of their class. Thus, in one hundred native decedents, 30.39 are under five years of age; while in one hundred deaths of foreign decedents we find 43.05 under five years. In the smaller and most critical period of from one to two years of age, the disparity is much greater, being 5.22 to 11.55. At adult age we find both classes furnishing about the same proportion of the mortality. At the fifty-to-sixty period, however, we find the earlier relations of the classes reversed; for in a hundred native deaths we have 9.05, while a hundred other decedents furnish only 4.09 in that age-period. Both ratio and absolute numbers of deaths continue with singularly little alteration through the two succeeding decennial periods, the exact figures being 9.16 to 4.55, and 9.52 to 4.90. In the next decade, 80-90, the proportions are 4.64 and 1.98 for native and foreign classes respectively. So that we have more than thirty-three decedents over fifty years old, of native birth, in each hundred; while one hundred decedents of the foreign class have only sixteen above that age.

For a period of thirty-four years the proportion of deaths under five years of age has been, for the whole people, 39.05 per cent. The range in eighteen years has been from 29.59 in 1867, to 45.91 in 1856. During that period, children under five years have furnished, of the native class, 30.37 per cent., and of the foreign 45.43.

The mortality tables here given are very various, and admirably fitted to bring out and exhibit the most valuable and interesting relations. The summaries and remarks upon the more prominent diseases as causing death in this year and in the past, are also of great interest. Time and space, however, alike forbid further comment.

5. The San Francisco report contains, and indeed is principally made up of mortality tables. Apparently the births and marriages are not considered to be within the line of a health officer's duties, for they are not here mentioned. Of course we do not mean by this remark to reflect in any way upon the gentleman who makes the report. We presume that his duties have been prescribed by law, and have no reason to doubt that they have been faithfully performed. It would seem, however, more judicious to publish the three different branches of vital statistics together.

The death-rate of San Francisco is somewhat higher than usual, owing principally to epidemic prevalence of scarlatina. As thus increased it is exactly the same as that of Philadelphia for 1873, and therefore lower than that of most great cities.

Aside from scarlet fever, it is claimed that the city of San Francisco enjoys unusual exemption from zymotic diseases.

The Chinese population introduce into the statistics a large element of uncertainty and error. Even their number is not accurately known. Their deaths furnish a very large proportion of those reported as "unknown" in causation. The figures as obtained would seem to indicate a mortality much greater than that of the white population.

We are disposed, however, to believe that other elements of error and uncertainty enter into these statistics, besides the ignorance and reticence of an Asiatic people.

If the death-rate of this city is really, and not merely apparently, low, it must certainly be attributed to the beneficence of nature; for we read of whole districts poisoned by bad sewerage and other forms of filth.

One ward, whose whole character, situation, and circumstances are most unpromising in a hygienic point of view, is yet found to exhibit a surprisingly low death-rate. The idea is suggested whether possibly the fumes of sulphurous acid, from a certain manufactory, may not possibly have exerted a disinfectant influence, by destroying in the air the otherwise fertile germs of disease.

B. L. R.

ART. XXXV.—*Fifth Clinical Report of the Rotunda Lying-in Hospital*, for the year ending 5th November, 1873. By GEORGE JOHNSTON, M.D. Edin., M. R. C. S. L., Master of the Hospital. Dublin, 1874.

Sixth Clinical Report of the Rotunda Lying-in Hospital, for the year ending Nov. 5, 1874. By GEORGE JOHNSTON, M.D. Edin. Dublin, 1875.

IN the report for 1873, after showing the care with which his statement has been prepared, so as to make it unquestionably accurate, Dr. Johnston expresses his thanks that no epidemic had visited the institution during the year, although many such had existed in the city. This he attributes to improved ventilation obtained as follows :—

"The upper sash of a window in each ward being kept constantly open to the extent of six inches, to the doing away with the old-fashioned canopies and curtains of beds; the insisting on the immediate removal of all excreta from the wards; the thorough cleanliness of the patients and their surroundings; the regular attendance on them night and morning; supporting their strength with nutritious animal diet, such as chicken broth, beef-tea, etc., judiciously given from the commencement; and not allowing labour to proceed until febrile symptoms appear, but by timely interference relieving the patients from an amount of suffering and exhaustion, and consequent danger, to which they otherwise would be liable."

The general summary for the year is as follows :—

Patients confined in the hospital	. . . . .	1191
" " at their own homes	. . . . .	77
" under treatment in the wards for uterine diseases	. . . . .	286
" prescribed for at the dispensary	. . . . .	2814
Total number of cases	. . . . .	4368

Of the 1191 patients confined in the hospital, 934 were cephalic cases delivered by natural efforts within twenty-four hours. In 39 the labour exceeded this period; 15 gave birth to twins; 1 to triplets; 44 aborted, *i. e.* within six months, two being hydatids; 5 children presented by the upper extremity, and 35 the lower; 142 were delivered with forceps. In 6 the perforator was used, after there was evidence of foetal death. Version in 16 cases. Labour induced in 2 cases of pelvic deformity; 10 admitted with accidental hemorrhage; 3 with placenta prævia; 10 cases of *post-partum* hemorrhage, one of which required injection of perchloride of iron; 13 cases of retained placenta; 10 of prolapsed funis; 4 cases of convulsions; 5 patients were epileptic; apoplexy occurred in 2 instances, and mania in 8.

State on Admission.—1, phlebitis from inflamed varicose veins; 6, typhoid fever; 2, gastritis; 25, bronchitis; 12, laryngitis; 1, pleuritis; 3, pneumonia; 4, phthisis; 1, disease of mitral valve; 1, renal disease; 3, ulceration of vagina; 1, ecchymosis of labia and perineum; 1, purpura; 1, rubeola; and 8 cases of syphilis; 35 of the women were labouring more or less under distress of mind; being cases of seduction; recently widowed; desertion; maltreatment, etc.

"Surely when such cases as these are taken into account, the hospital should not be charged with being the cause of their death, should it occur, as the same result would, in all probability, have taken place had they been confined elsewhere. And here I can confidently say, that after five years' experience, and close watching of 5791 cases, in no one instance could a death be attributed to their labour having taken place in the hospital." (p. 6.)

This is very strong testimony; going to show what can be done in an old hospital with proper care, in which at one time such results would have been thought impossible.

A large portion of the report is taken up with detailed statements upon the several heads already mentioned. We shall only refer to a few of them.

Triplets.—Eleventh confinement: girl, 6 pounds 4 ounces; boy, 5 pounds 8 ounces; girl, 4 pounds 8 ounces. Two placenta united, and one distinct. Mother left with the three, on the 17th day.

Forceps Cases.—Of the 142, 104 were primiparae, 65 of whom were delivered of male, and 39 of female children. 60 males were born alive, and 56 lived; all the female children lived. Of the 38 pluriparae, 22 had male children, and 16, female. 19 of the former, and all of the latter were delivered alive. 2 males, 1 female subsequently died.

Results in Forceps Cases.—132 recovered; 1 pluripara, and 9 primiparae died: 2 from peritonitis, 1 being a case of seduction, and the other anæmia; 2 of pyæmia, 1 being a case of seduction and the other great delay in first stage from size of foetus; 4 died of convulsions, 1 having albuminuria, and 1 embolism of right pulmonary artery with disease of kidneys and ovaries; 1 died of gastritis with which she was admitted; and 1 of laryngeal phthisis.

Craniotomy.—6 cases, 4 primiparae, 2 pluriparae. All recovered but one of the latter, who died in thirty-eight hours from shock.

Version.—16 cases, 3 primiparae, 13 pluriparae; 14 recovered, and 2 of the latter died, one of pneumonia twenty-two days after delivery, and the other of acute bronchitis on fourth day, having had the disease two weeks before admission. 12 children were born alive, 6 of each sex, of whom 2 males and 3 females died.

Post-partum hemorrhage not favoured by a short second stage, for of 686 cases where this stage was within an hour, there were but 4 of *post-partum* hemorrhage, out of the 10 cases that occurred in the whole; 3 were slight, and 1 required injection of solution of perchloride of iron.

Prolapsus of Funis.—10 cases, mothers recovered, 3 children saved.

1060 of the 1191 placentaë were delivered within fifteen minutes.

Deaths from all cases, 32, or 1 in 37½, 17 being accidental and 15 zymotic.

Causes of Death.—1, mental distress from seduction; 4, phthisis; 1, gastritis of some months' duration; 2, pneumonia, with which they were admitted; 1, syncope after violent passion on fourth day; 1, acute bronchitis contracted before entrance; 1, shock after craniotomy; 1, apoplexy; 1, heart disease; 1, Bright's disease; 3, convulsions; and 1, laryngitis.

The zymotic cases were, puerperal fever, 1; peritonitis, 7; pyæmia, 4; enteritis, 1; phlebitis, 1; and uterine diphtherite, 1.

"Deaths from zymotic diseases, to a great extent, have taken place in the various parts of the city, during the year; and although the patients delivered came from the various infected localities, and in some instances, even from among their families, where members were laid down with sickness, still they did not convey the malady to any of the other patients in the ward; thus showing that epidemics may prevail outside, and still the hospital be perfectly free from them." (p. 28.)

Having visited this institution at a period when its mortality was far greater than at present, we are glad to be able to report the benefit of an improved system of management in its wards and cases.

The report for 1874 presents the following general summary:—

Patients confined in the hospital	1236
" " at their own homes	153
" under treatment in the wards for female complaints	254
" prescribed for at the dispensary, one-half of which were treated for diseases of the womb in the gynæcological department	4927
Total number of cases	6570

Of the 1236 delivered in the hospital, 997 were cephalic cases, terminating by natural efforts within twenty-four hours. In 40 the labour exceeded this period, the majority of which had been under care of practitioners or midwives before being sent to the hospital; 24 gave birth to twins. In 45 the ovum was expelled within the sixth month of gestation; the forceps were used in 138 cases; perforator not used. Version in 14 cases; 7 admitted with accidental hemorrhage; 6 with placenta prævia; 25 cases of post-partem hemorrhage, mostly trivial; 7 cases of retained placenta; 13 of prolapsed funis; 5 of convulsions; 2 epileptic; and 5 of mania, 1 of which died of apoplexy.

Mortality.—There were 15 deaths from all causes, against 32 in the previous year, or 1 in 82½. Of these, 10 were zymotic, viz., 3 scarlatina, 4 peritonitis, 1 pyæmia, 1 typhus, and 1 typhoid fever.

Scarlatina.—Ages 22, 26, 31.—In first, rash appeared in 39 hours after confinement; in second, immediately; and in third, in 51 hours. Death in first, on third day of attack; in the second, peritonitis occurred on third day, and death from it on the eleventh; and the third died in 48 hours from the disease, as in the first, without abdominal or uterine complication. There were 15 cases of scarlatina admitted, in all of whom the disease appeared on or before the third day, and there were no other cases of disease traceable to them.

Besides the 10 zymotic cases resulting in death, there was 1 death from apoplexy, 1 placenta prævia, 1 bronchitis, 1 sloughing, and 1 fatty degeneration of kidneys, liver, and heart.

Premature births 51; 31 in seventh, and 20 in eighth month. Of the seventh

month cases, all the mothers recovered but one, who died of hepatic and renal disease; 17 children were born alive, and but 3 girls and 1 boy lived. Of the eighth month cases, all the mothers recovered; 15 children born alive; 2 boys and 7 girls lived.

Forceps cases 138; 105 were primiparæ, 5 of whom died. The 33 pluriparæ all recovered. The deaths were one each of apoplexy, scarlatina, bronchitis, sloughing of vagina with peritonitis, and peritonitis. Children delivered alive 128, saved 119.

Degree of dilatation of the os uteri at the time of operation.—Four inches being assumed to be the measure of full dilatation, four-fifths will be $3\frac{1}{5}$ inches; three-fifths, $2\frac{3}{5}$ inches; and two-fifths, $1\frac{3}{5}$ inches. 24 cases were operated upon at $\frac{2}{5}$ dilatation, 19 being primiparæ; 18 primiparous children lived, and 4 pluriparous; 2 primiparous women died. 12 cases were operated upon at $\frac{3}{5}$ dilatation, 11 being primiparous. 10 primiparous children lived; the other two were still-born—mothers recovered.

Craniotomy not performed in fifteen months; attributed to the adoption of the double-curved forceps in place of those with straight blades.

Version.—14 cases, all primiparous; one mother died of hemorrhage, with laceration of vagina and cervix.

Placenta Prævia.—5 cases pluriparæ; 4 mothers and 3 children saved; 4 by version; 1, forceps.

Prolapse of Funis.—12 cases; all mothers recovered; 5 children saved.

Dr. Johnson uses the forceps once on an average in ten deliveries, and certainly has met with marked success in the results of his treatment. This frequency is condemned by some of his colleagues as a dangerous example for less skilful practitioners to follow. There have been instances here and in Ireland, where wonderful results were attained in private practice covering a number of years, by obstetricians who resorted to the instrument still more frequently than this, and even as much as one in seven. R. P. H.

ART. XXXVI.—*Experimentation on Animals as a Means of Knowledge in Physiology, Pathology, and Practical Medicine.* By J. C. DALTON, M.D., Professor of Physiology in the College of Physicians and Surgeons, New York. 12mo. pp. 69. New York: F. W. Christern, 1875.

DR. DALTON'S little volume is a brief argument to the laity in regard to the subject of the use of animals for scientific investigations. He deals first with its character, and, defining cruelty, goes on to show just what amount of pain is given in the laboratory, and how far it has been over-stated. In so doing he should, we think, have discriminated as to his antagonists, some of whom would permit the use of animals to certain persons under certain general restrictions, while the greater number would deny to us all such aid. Perhaps Dr. Dalton's book may reach and touch the outside jury of the great public, but no one within the ring of philo-canines will be made by it to think that even for a man a dog should die or suffer.

In Chapter II.—The necessity of such experimentation is very neatly put. It might have been made stronger by the single case of a new medicine such as chloral. A physician suspects it to have power to give sleep. How shall he test it? On a patient—hardly. It may be a deadly poison. On a dog, of

course; and naturally on one already condemned to die. Let him ask in Philadelphia for such a one, and he will be told that the ladies reserve to themselves the pleasure of feeling sure that in dying the dog shall not benefit man. From this case there is no escape. If it were impossible to have tested on dogs the power of chloral, humanity might long have waited for this precious gift from science to the healing art.

In Chapter III.—The results of the use of animals are treated of, and what we have learned by it in regard to circulation, respiration, etc., is told in the clear, concise style which Dr. Dalton so well knows how to use. Lastly, Dr. D. gives the resolutions of New York societies and the opinions of men of eminence as to the use of animals in the laboratory. We learn here most distinctly that now again, in New York, an effort is being made to render unlawful the use of animals in experiment. Once before this was tried and failed. Once in Pennsylvania it was talked of, but went no further. We need not fear that it will elsewhere; but should it do so, it would not check men of science in using animals. It would but create a new crime—in law—and men would accept the weight of legal sin as they did when to dissect man's body was illegal.

S. W. M.

ART. XXXVII.—*Outlines of the Science and Practice of Medicine.* By WM. AITKEN, M.D., F.R.S., Professor of Pathology in the Army Medical School. 12mo. pp. xx., 593. London: Charles Griffin & Co. Philadelphia: J. B. Lippincott & Co., 1874.

DR. AITKEN is the author of a systematic treatise on "*The Science and Practice of Medicine*," which has reached a sixth edition, and is deservedly popular as a text-book, with the profession. We are therefore at a loss to conceive what could have induced him to publish a book which, as he avows in the preface, is intended "to furnish such a digest of the science and practice of medicine as may be an aid to the memory, and a help to the student in preparing for examinations;" since works of this class very rarely emanate from successful teachers. We doubt, moreover, whether students who habitually have recourse to them ever become distinguished physicians. In fact its deficiencies appear to be clear to the author himself, for he is constantly referring in it to his larger work.

We have spoken in condemnation of the class to which this book belongs, but we must in candor add that the amount of valuable knowledge which Dr. Aitken has been able to crowd into its pages has surprised us; many conditions being treated of which fall in this country to the care of the surgeon. Among these may be mentioned diseases of the eye, and the primary lesions of syphilis. We need scarcely say, in conclusion, that the book is, as far as it goes, thoroughly representative of the present condition of medical science.

J. H. H.

ART. XXXVIII.—*Dental Pathology and Surgery.* By S. JAMES A. SALTER, M.B., F.R.S., Member of the Royal College of Surgeons, and Examiner in Dental Surgery at the College; Dental Surgeon to Guy's Hospital. 8vo. pp. xx., 399. New York: William Wood & Co., 1875.

AN author who, for twenty-three years, has honourably devoted himself to the science of this specialty, Dental Surgery, could not well attempt a work of

this character without adding to the store of knowledge and exciting interest in a subject that is as yet but imperfectly understood. When it is remembered that he has during a long time enjoyed the opportunities afforded by his connection with Guy's Hospital, it may also be said that he should be eminently qualified to enter upon the description of the "debatable ground between that occupied by the surgeon and by the dentist." This was evident from his being "solicited to contribute the article on" "Surgical Diseases connected with the Teeth," in the *System of Surgery* edited by Mr. Holmes, and his papers published by the Royal Medical and Chirurgical Society, the Pathological Society, and in the *Guy's Hospital Reports*, *Archives of Dentistry*, and *Dental Journal*.

The present volume, he states, "is a digested collection of all my previous essays and papers," with additions "to previously published matter." While he acknowledges that subjects belonging to his specialty have been omitted, he claims "only to express views and to record observations where I could do so with authority."

The limit of this notice compels the omission of much that to the specialist is most worthy of study, and the manner of presenting the interesting experience of years of practice, can be afforded only a passing notice—at the same time it must strike the reader with regret that there is such a general failure to mention some of the ablest writers upon this side of the water, and singularly enough to awaken a passing comment through the whole body of his work, he refers to only six American authors, and here even in a most apologetic or superficial manner, in two instances such references being to men who long since have been gathered with the past.

After an able chapter, with the exception of some omissions referred to, upon the "General Anatomy of the Teeth and Contiguous Structures," a most interesting one, probably the best in the whole book, on their functions follows, which might be most profitably studied by the physiologist, opening a large field for the comparison of the relationship between the formation of the mouths of different races of men with their languages or dialects.

In succeeding chapters he treats of supernumerary, third sets, deficiencies, irregularities, and united teeth.

In his remarks upon the V-shaped or rabbit mouth, he states that "Dr. Langdon Down has pointed out that it is very frequently concurrent with congenital idiocy. It must be observed, however, that this form of jaw is often seen in persons of the highest intellectual capacity." Here the author might have expressed himself more definitely, and by reference to a report of examinations of the mouths of the inmates of the Pennsylvania Training School for Feeble Minded Children, made by Dr. Jas. W. White,¹ he would be able to demonstrate that this peculiar deformity is by no means diagnostic of mental defects; for, this occurs more rarely in such unfortunates than in the most highly gifted offspring.

The above conclusion has been strengthened, if not verified, by an extended series of observations by Drs. N. W. Kingsley, of New York, C. N. Pierce, J. H. McQuillen, and Stellwagen, of Philadelphia.²

Next, secondary dentine, congenital defects of structure and form, caries, abscess and staining of dentine, mechanical injuries, tumours, and diseases of the pulps of teeth are treated of.

To the above succeeds a chapter on epulis—that, until recently, much con-

¹ See *Dental Cosmos*, April, 1872, p. 205.

² See *Transactions of the New York Odontological Society*, Dec. 1874.

fusing nomenclature of a common disease, in which he seems to have partially understood the objection to the word, but not to have adopted the remedy of an American author, and used the term *epulis* "as an adjectival noun."¹

He speaks of it as always associated with porous, vascular bone, nearly connected with the *periodontal* membrane (it here may occur that the word *periodontal* avoids the combination of a Latin with a Greek root). After advancing the opinion that extraction of the teeth adjoining the tumour often effects a cure, he describes the operation by excision of a V-shaped or cubical mass of the bone upon which the growth is supported, but very properly objects to the removal of a segment of the inferior maxilla, as interfering unnecessarily with the function of the remaining portions, and their contained or supported teeth.

He seems to have overlooked the value of continued pressure for causing the absorption of an incipient *epulic polypus*.

Then follows an account of cases of impaction of permanent teeth, showing how a mistake in the diagnosis of a comparatively simple difficulty may be made by learned physicians, a matter though rather of wonder that it so seldom does occur.

In the treatment of dentigerous cysts, he speaks of scalpel, bone-nippers, saw and extracting forceps, omitting to mention those invaluable instruments—the chisel and gouge—with which, in this country, our surgeons perform some of the most extensive resections of the jaws through the open mouth, thus avoiding the disfigurement so often resulting from cutting the integuments of the face.

The American dentist will be much astonished at the want of attention given to alveolar abscess, which is, to say the best of it, lacking in some very important features of the usually successful means daily employed by them to save and render useful organs that have been attacked. Indeed, so much possibly has been assumed to be known by the reader, that any one unfamiliar with the treatment, would be led to such erroneous conclusions that the omission of the entire chapter would relieve the book of an unfortunate feature. The same may be said of the succeeding chapter on Abscess of the Antrum, where, in addition to the absence of anything new in the management of the malady, he seems to advise the extraction of teeth as if they were corns or warts, expressing himself that if even a canine tooth (which all know is one of the most useful, lasting, and important teeth) is the cause it should be removed without adding any qualification as to the probability of successful treatment and course to be adopted for its retention; neither does he notice the very general plan of opening from the vestibule of the mouth through the external plate of the maxilla, above the roots of the teeth. Such neglect of the common operation, at least on this side of the Atlantic, can only be accounted for upon the supposition that his reading of our literature and journals must have been exceedingly limited, as has already been hinted at in the opening remarks of this notice.

The author's presentation of the "Affections of the Nervous System dependent on Diseases of the Teeth," is a systematic step into the study of some of the most astonishing phenomena connected with diseases of the fifth pair of nerves. This subject will bear elaborating, but he has rendered invaluable service by clinical reports, which, as yet, are comparatively rare and scattered. To some fifteen cases of others he has added about eight wherein he was either in consultation or charge.

¹ See "Anomalous Tumours," by Jas. E. Garretson, M.D., *Medical and Surgical Reporter*, New Series, vol. vi. No. 12.

Phosphorous disease receives considerable attention, and to one who may be called upon to take charge of a patient afflicted with this loathsome, tedious, and dangerous affection, may be truly worth the cost of the entire work.

The hypertrophy of the secondary bony tissue of the replaced jaw that is sometimes found, however, does not seem to have come under notice, but rather the atrophied condition that is perhaps more frequently met with. The use of carbonate of magnesia to neutralize the acid condition of the secretions is likewise omitted,¹ as well as the capping of teeth, as practised by the dentist with gutta percha, to prevent increase of irritation by their occlusion,¹ and the danger of attempting the removal of the sequestrum before complete detachment, is allowed to be inferred upon general principles rather than urged upon the attention of the surgeon, as Garretson and Billroth² both have seen fit to do.

Necrosis and exfoliation of the alveolar process he very justly thinks is more frequently the effect of the disease itself, rather than of the drugs used in treatment. This opinion he has based upon observation of a number of cases where it was "one of the secondary consequences resulting from attacks of the eruptive fevers—scarlet fever, measles, and smallpox. These cases have been so singularly uniform in their origin, course, and entire history, that though following different forms of eruptive disease, they would seem to have a generic identity."

"After scarlet fever I have now seen fifteen or sixteen cases; after measles about five or six, and after smallpox four."

This is the result of fifteen years' experience "combining private practice with the large population of poor who seek assistance at Guy's Hospital," so that it does not seem to be a very frequent occurrence. It may, however, result after a mild attack of scarlatina, and is generally discovered by the attendant's attention being arrested by the fetor of the patient's breath. Examination shows that the gum about some of the teeth is stripped from the bone and the free margin of the mucous membrane, red and tumid with pus oozing from the inside. There is no thickening of or effort to form new bone, nor are there fistulae or sinuses.

The condition grows worse for six or eight weeks, at the end of which time the sequestrum is generally detached, and the place heals rapidly.

The disease is symmetrical, and although it may be met with in both jaws of the same patient, causing the loss of four pieces of alveolar process, it is most frequently confined to one jaw.

The difficulty is generally met with in four or five weeks after an attack of the eruptive fever, but never after eight or nine weeks, and there is rarely any swelling or pain, nor is there any comparison between the amount of exfoliation and severity of the fever, and it "generally occurred in very healthy children."

The necrosis is always confined to the jaws in these cases—to the bones, that is, which encompass the young teeth; the rest of the skeleton escapes.³

"It happens during the time that the most active tooth development is going

¹ See *System of Oral Surgery*, by Jas. E. Garretson, M.D. Phila. 1874, pp. 586, 593.

² *General Surgical Pathology and Therapeutics*, by Dr. Theodore Billroth. New York, 1872, p. 448.

³ In the museum of the Philadelphia Dental College there is the right side of the inferior maxilla of a child including ramus, condyle, and teeth, supposed to be a sequel of measles. See description in Garretson's *System of Oral Surgery*, p. 581.

on about five or six years of age. From three to eight are the extreme limits I have seen." Mr. Salter accounts for this peculiar kind of necrosis by reference to the very generally received opinion that as teeth are "members of the dermal system, . . . they would share the consequences which attend those particular diseases which spend their chief force on the skin."¹ He asserts his "belief that the particular form of alveolar necrosis here described is one of the *specific sequelæ* of the eruptive fevers."

Chapter XXIII. gives the account of two cases that are claimed to be syphilitic alveolar periostitis. The succeeding one, on extracting teeth, is, like most of those where the author attempts to handle subjects belonging exclusively to dentistry, erroneous and defective to a lamentable degree.

"Cleft and Perforate Palate," the final theme of our author, is rather open to the charge of special pleading of which he accuses those who object to staphyloraphy. He says: "In stating the comparative advantages of surgical and mechanical treatment, this dependence on the mechanist has never been sufficiently appreciated, as it seems to me, by those who espouse the palliative and supplemental help of the dentist . . . if an accident befall his artificial mouth he is helpless and practically dumb, till the artificer again makes good his mouth deficiencies." If staphyloraphy relieved one entirely from danger of accidentally severing the cicatrix, or if the operation could be performed as readily as reduction of dislocated inferior maxilla, his case would be stronger; but what is to be done in those distressing cases wherein only a few years ago no operations or artificial palate could offer relief? He criticizes a well-known American improvement: "Mr. Kingsley's arrangement may be very comfortable and very firm, as is the case with Paré's Obturator. As regards the latter, there has been abundant time and opportunity to appreciate and realize its ultimate evil consequences; Mr. Kingsley's apparatus has hardly yet been sufficiently long in use to declare its real effect upon the parts of a defective palate." It would almost seem to be as good an indorsement of this most excellent contrivance as he could give—namely, the only objection that he can find to it after it has been for years in use is a purely theoretical one. In exchange for this American contrivance he offers one which seems to have little to recommend it save that it is the production of his friend Mr. George Parkinson.

T. C. S.

ART. XXXIX.—*Anleitung zur Klinischen Untersuchung und Diagnose. Ein Leitfaden für Angehende Kliniker.* Von Dr. Med. RICHARD HAGEN, Privatdocent an der Universität in Leipzig. Zweite umgearbeitete, verbesserte und vermehrte Auflage. 12mo. pp. xvi., 173. Leipsig. Verlag von Veit & Comp., 1874.

Directions for the Clinical Study and Diagnosis of Disease. A Guide for young Clinicians. By RICHARD HAGEN, M.D., Lecturer at the University of Leipsic. Second Edition, revised and improved.

THE systematic treatises on pathology often fail to convey to students a kind of information, which no physician can well be without who aspires to distinction as a diagnostician, and it is just this want that the little book before us is

¹ "John Hunter declared that the alveolar processes of both jaws should rather be considered as belonging to the teeth than as parts of the jaws."—*Studies in the Facial Region*, by Harrison Allen, M.D. Philadelphia, 1875. pp. 44.

intended to supply. Any one who will take the trouble to render himself thoroughly familiar with its contents, will, we are sure, not only acquire a knowledge of what he ought to observe at the bedside, but will also learn what estimate to put upon the different symptoms and how to interpret them. In plan it does not differ materially from a work by Dr. Octavius Sturges, entitled "*An Introduction to the Study of Clinical Medicine*, etc." which was noticed in the October Number of this Journal for 1873.

The first half of the book is devoted to the discussion of general subjects, such as the definition of disease and of symptoms; the manner in which a physician should conduct an examination of a patient; the physical methods of diagnosis; the examination of the urine and other secretions; directions for obtaining the history of patients; etc. In the latter half diseases are grouped together which affect the same part of the body, and which, having many symptoms in common, are not always readily distinguished from one another. To enable the student to do this readily is the object which the author has sought to attain.

The book is an excellent one of its class, and one which, were the market not already stocked with this kind of material, it might be well to translate into English.

J. H. H.

ART. XL.—*Commentarii di Medicina e Chirurgia publicati da professori dell' Università' e da Medici dell' Ospitale di Pavia*, per cura del prof. A. DE-GIOVANNI pella parte medica, e del prof. A. SCARENZIO pella parte chirurgica. Novembre, Decembre. Anno 1. Milano, 1874.

Commentaries of Medicine and Surgery, published by the Professors of the University and Physicians of the Hospital of Pavia. The Medical Parts under the direction of Prof. A. DE-GIOVANNI, and the Surgical under that of Prof. A. SCARENZIO. November and December, 1874. 1st year. Milan: A. Giuliani & Co.

THIS is the third number of the above-named journal, and bids fairly to become one of the most prominent of the medical periodicals of Italy. It is in octavo form, is published every two months, and will make a volume of about 500 pages at the end of the year. Like the journals of Italy generally the paper is inferior, and the letter-press and illustrations are of the same character. In the style of issuing medical books Italy is much behind many other parts of Europe.

In this number there are three original articles, viz.: Clinical remarks upon deforming endoarteritis; second, and concluding part, with reports of ten cases, by Dr. De-Giovanni. . . . Lecture of Dr. Arigo Salvatore upon obstructed circulation of the interior of the intestine, and strangulation of this viscus; delivered before the autumnal session of the Medical Council of the Maggiore Hospital of Lodi, with reports of fifteen cases. . . . And Laryngoscopic Operations, by Dr. Carlo Labus, specialist for diseases of the throat in Milan.

The last article is accompanied by eleven laryngoscopic illustrations, showing polypi and other more serious growths which the author had removed from the vocal cords, with notes of the cases in question.

The use of the laryngoscope has made the reports of such cases as numerous as they were rare before its discovery. The late Dr. Horace Green, of New York, whose office was every day crowded with cases of throat disease, and who died before the instrument was fairly introduced, told the reviewer after

having had a very large experience, that he had never found but four cases of polypus of the larynx, only one of which he had been able to see and remove.

Under the head of Short Articles ("*Piccole Comunicazioni*") are, 1st. A case of secondary amputation of all the metatarsal bones of both feet for gangrenous frost-bite, a periosteal flap being preserved to cover the stump of each bone, by Dr. Francisco Parona. Cure. . . . 2d. Uterine Polypus removed by means of an elastic ligature, by Prof. Angelo Scarenzo. . . . 3d. Capillary puncture of the bladder, by Dr. Carlo Bossi. . . . 4th. Left Hemiplegia—cerebral hemorrhage on the left side, by Luigi Mangiagalli. . . . And. 5th. Cancer of Mesentery.

R. P. H.

ART. XLI.—*Contributions to the Annals of Medical Progress and Medical Education in the United States, before and during the War of Independence.* By JOSEPH M. TONER, M.D. 16mo. pp. 118. Washington: Government Printing Office, 1874.

PREPARED as it was in the intervals of other occupations, and modest as are its claims, this little brochure must have required great labour and wide research. It contains the names of six or eight hundred medical men who lived and practised in Colonial and Revolutionary times. These are generally grouped together under the heading of the province in which they lived, or in connection with the chief movements with which their memories are associated. The biographic notes are extremely brief, limited often to a line or two.

Sketches are given of the earliest legislation, in the different colonies, for the benefit or regulation of the profession. The foundation of the earlier hospitals and medical societies; the educational requirements for medical practice, and the movements towards providing professional education at home; the infrequency of autopsies, and the opposition to dissection; the occurrence of notable epidemics—these are a few of the many matters glanced at in this rapid survey.

To the founders of our Pennsylvania Hospital Dr. Toner ascribes the credit of first instituting, in this country, clinical instruction, and a public medical library.

A fee-bill, here printed, established by the Virginia Legislature in 1736, allows five shillings a visit for town practice. The interest attaching to this bill would have been much greater had we been informed as to the purchasing value of the Virginia shilling at that period. The country physician, we are told, had trouble to collect any fees. He was often obliged to take pay in produce; and he usually united the calling of a farmer to that of a doctor.

It was not unusual for young men, pursuing their preparation for the ministry in the universities of the mother country, to add to their studies that of physic. They were thus better prepared for usefulness in a new and thinly settled land.

Those physicians who were established in practice took apprentices, and conveyed to them as best they could the mysteries of their art. Female physicians were not unknown. Indeed, the doctor tells us that the first person executed in the Massachusetts Bay Colony, was one of these. She was charged with witchcraft, because of unnatural potency of simple drugs in her practice, and the baneful results of her unfavourable prognoses.

Widows of physicians, in many cases, carried on the practice of midwifery perforce abandoned by their lords.

B. L. R.

ART. XLII.—*Croup in its Relations to Tracheotomy.* By J. SOLIS COHEN, M.D.,
Lecturer on Laryngoscopy and Diseases of the Throat and Chest, in Jefferson Med. Coll. Svo. pp. 78. Philadelphia: Lindsay and Blakiston, 1874.

THE subject of tracheotomy for the relief of croup has been a mooted point since its first introduction, and when the ill success which attended its practice for so many years is remembered, it is almost a matter of wonder that it has survived; but, like ovariectomy and some other operations, it furnishes an illustration of the proper application of a Darwinian theory, as by its fitness it has secured its existence. In surveying the progress of surgery, even in the last twenty years, no one can fail to observe how numerous are the operations, which, raised from the limbo of hare-brained attempts, have been established as wise and praiseworthy efforts to alleviate human misery, until even the ligation of the innominate artery has been crowned with success. In artificially opening the air passages to avert suffocation from croupous exudation, may be found another instance of the power of that method of reasoning in which a generalization has preceded the observed facts, although it has only been with the accumulation of accurately observed facts that the propriety of the practice has been demonstrated. Indeed, the study of this book shows how idealism and induction, the Platonic and Aristotelian, or, according to Tyndall, Democritian systems may work in harmony to bring forth one result. For many years the advocates of the operation now under consideration had to depend largely upon theory for their support, while it was left for Trousseau, Guersant, and men of the present day to show what steps were necessary to command reasonable success.

Dr. Cohen's book is especially rich in statistical tables which scarcely admit of analysis. It is noticeable that few cases of croup in which tracheotomy is done, recover when the patient is less than two, or over nine years of age, though more recover in the former than in the latter class. Croup following any of the exanthemata is not suited for operation, yet three successes after measles, and one after scarlatina are recorded, and in view of the depraved state of blood which commonly exists in these cases, the result can cause no surprise. Dr. Cohen treats largely of the indications for the operation, but the subject is too extensive and well known to be more than summarized here. A resort to the operation, even in extremis, is advocated, as giving the patient a chance, though it be but a slim one. The blue colour of the lips, and depression of the thoracic parietes, upon inspiration furnish the most trustworthy indications that surgical interference should be no longer delayed, as it seems pretty well settled that the postponement of the operation until a very late date, or until the patient is in articulo mortis, has contributed largely to the great mortality of which the early history of this proceeding is a record.

Dr. Cohen favours the administration of an anæsthetic, for though some oppose it, the weight of authorities advocate such a course, as aiding the careful and deliberate performance of the operation, which, because it is one of emergency is too often hurried and the hemorrhage not arrested, as it should be, when it occurs. The incision should be as near the cricoid cartilage as possible, and a piece of a tracheal ring should be excised if there is any difficulty experienced in the introduction of the tube. When this difficulty does exist, Guersant's dilator is often of service, or, should this instrument not be at hand, a gum catheter passed through the tube so as to project beyond its extremity, forms an admirable guide in this often perplexing step of the operation.

In discussing the after-treatment, Dr. Cohen refers with strong commendation,

to the work of M. Saurré, which contains an analysis of six hundred and sixty-two cases, and acknowledges his indebtedness to it for many of his conclusions. The subject occupies the remainder of the volume. It is of essential importance that skilled assistance should be at hand to render *immediate* and intelligent aid, if necessary, for the first thirty-six hours, as many lives are lost during this period from neglect or ignorance. The tube should be dispensed with at as early a day as practicable, and the whole after-treatment should receive careful study and close attention, as it has been by strict attention to the details, and by improvements in this direction, that the mortality of this dreaded procedure has been of late years diminished.

Viewed as a whole, this brochure contains much that every practical surgeon should know, and gives a full exhibition of the present position of this remedial measure, and its author is entitled to the thanks of the profession for the good work he has done. S. A.

ART. XLIII.—*A Guide to the Practical Examination of Urine. For the Use of Physicians and Students.* By JAMES TYSON, M.D., Hospital Lecturer on Path. Anat. in Univ. of Pennsylvania, etc. With a plate and numerous illustrations. 12mo. pp. 182. Philadelphia: Lindsay & Blakiston, 1875.

THIS admirable little volume treats first cursorily of the general physical and chemical characters of the urine, and then proceeds to a careful study of its different constituents in health and disease, and concludes with a few remarks on the differential diagnosis of renal disease, and on the mode of determining the composition of urinary calculi.

The different tests which are held in highest esteem for the detection and quantitative analysis of the various normal and abnormal constituents of urine are given clearly and carefully, and the reader is duly cautioned concerning the various circumstances which may interfere with the operation of the respective tests or their correct interpretation.

That a demand exists for books exclusively devoted to the examination of the urine seems to be proved by the appearance within the last few years of several brochures of this character, and to all who desire more elaborate information on the chemistry of the urine than is to be found in treatises on renal diseases (such as Robert's or Harley's) or in systematic works on diagnosis (like DaCosta's), where only one or two of the most approved and readily applied processes of analysis are given, we unhesitatingly recommend Dr. Tyson's manual. I. M. H.

ART. XLIV.—*Essentials of the Principles and Practice of Medicine. A Handbook for Students and Practitioners.* By HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania, etc. etc. Fourth Edition, thoroughly revised; with one hundred illustrations. Small 8vo. pp. 548. Philadelphia: Henry C. Lea, 1874.

WHATEVER prejudice may exist against works of this class among the older members of our profession, they are and always have been popular with students, and found to supply a want which exists among them. The pretentious and dogmatic *vade mecum*s of our student days, fully justified the condemnation of such professed aids to students, but the present work is altogether of

a different and much higher order, and if properly used, without being exclusively depended upon, we think it may advantageously assist the novice in his studies. Entertaining these views, we recommend this work as the very best of its class of which we have any knowledge.

ART. XLV.—*On the Treatment of Pleurisy; with an Appendix of Cases, showing the Value of Combinations of Croton Oil, Ether, and Iodine as Counter-irritants in other Diseases.* By JOHN W. CORSON, M.D., Late Phys. to Class "of Diseases of Chest and Throat" in New York and Eastern Dispensaries. 12mo. pp. 31. New York: Wm. Wood & Co., 1874.

WE remember to have heard, when a student at Vienna some years ago, Prof. Hebra inveigh in most unmeasured terms against the use of counter-irritants, regarding them as incapable of doing good, and as the frequent cause of skin disease. This opinion is unquestionably an extreme one, and one which we fancy would be endorsed by but few physicians in general practice. On the other hand, Dr. Corson is disposed, it seems to us, to attach too much importance to their use, and to refer to them a larger share in the production of the very favourable results, which appear—for he gives us no figures—to have attended his treatment of pleurisy, than can be justly attributed to them. The combinations¹ of ether, iodine, and croton oil which he recommends as counter-irritants will, we have no doubt, hasten the absorption of pleuritic effusions, but they are vastly inferior in this respect to most of the diuretics. Besides which the eruption caused by croton oil is generally followed by cicatrices, which is, in our opinion, a great objection to its use, especially since in most cases the same end may be attained by milder means.

Except that, as we have already said, Dr. Corson lays too much stress upon counter-irritation, the treatment of pleurisy he recommends shows him to be a judicious practitioner, and one too who has made good use of the rather unusual opportunities he has enjoyed. His experience has shown him the advantage of consulting the palate even of poor patients by adding to their medicines an aromatic preparation, which not only renders these more acceptable to the stomach, but seems to increase their efficiency.

The book contains two wood-cuts, showing different positions in which the patient should be placed when the back of his chest is being examined. In one of these the patient is directed "to cross both arms and grasp, not these, but the highest points on the shoulders as far back as he could reach. He then pulled them steadily and firmly forward, so as to separate the shoulder blades, and hold them fixed as widely apart as possible behind." This process he calls *uncovering*; for it partly lays bare the ribs under both scapulae and stretches and thins the thick muscles in the rear. In the other position the arms are crossed, and locked behind the head.

J. H. H.

¹ The formulæ he recommends are as follows:—

Milder croton oil paint.

R.—Olei croton. tiglij, ʒj;
Ether. sulphur. fort. ʒij;
Tinct. iodin. ʒv.—M.

Stronger croton oil paint.

R.—Olei croton. tiglij, ʒij;
Ether. sulphur. fort. ʒiv;
Tinct. iodin. ʒij;
Potass. iodid. ʒj;
Iodinii, gr. x.—M.

Apply two or three coats at a time, with a camel's hair-brush, over a small surface, once a week.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *A Simple Process for Estimating Urea in the Urine.*—With the exception of the yeast process for the estimation of sugar, there has been up to the present time no accurate method adapted for clinical use by which it was possible to make quantitative determinations of the various constituents in the urine. Of the normal constituents urea is by far the most important; yet Liebig's method, which is that commonly used for its estimation, is so lengthy and elaborate as practically to be useless for clinical purposes.

The following method devised by W. J. RUSSELL, Ph.D., F.R.S., and SAMUEL WEST, B.A. Oxon., (*Practitioner*, Feb. 1875) is based upon a chemical reaction which has been long known, but which has not hitherto been available for general use, on account of the elaborate calculations which had to be made with every experiment. With the present form of apparatus these difficulties have been overcome, and accurate results can be obtained by it in a very few minutes. The apparatus is, moreover, easy to use, and inexpensive, and its various parts can, if broken, be replaced separately at a very slight cost.¹

Urea, as was first shown by Dr. Davy, is decomposed by hypochlorous or hypobromous acid in the following manner:—



that is to say, it is split up into water, carbonic acid, and nitrogen. If the carbonic acid be now absorbed by passing it through a solution of caustic soda, the gas evolved will be nitrogen alone. Davy proposed to measure this nitrogen and from it to determine the quantity of urea which had been decomposed, according to the formula:—

60 parts by weight of urea = 28 parts by weight of nitrogen.

The decomposition is not quite so complete in reality as he stated. Sixty parts of urea by weight really produce only about twenty-six parts by weight of nitrogen; that is to say, there is a loss of about eight per cent. The importance of this loss of nitrogen we shall refer to later.

The reagent employed is a solution of hypobromite of soda in considerable excess of caustic soda; and the most convenient strength of solution is found to be that prepared by dissolving 100 grammes ($3\frac{1}{2}$ ozs.) of caustic soda in 250 c. c. (9 ozs.) of water, and adding to this, when cold, 25 c. c. (7 drachms) of bromine.

The solution unfortunately decomposes if kept for some little time, and it is safer to make it in small quantities as it is required. This may be easily and

¹ The apparatus is sold by Messrs. Cetti, Brook Street, Holborn, price 8s. 6d.

quickly done by keeping in stock a solution of caustic soda of the necessary strength, and adding to a portion of this the requisite quantity of bromine at the time the experiment is made.

The apparatus, the form of which is shown in the accompanying sketch, consists essentially of three parts—a tube, A, in which the reaction takes place; a measuring tube, F, to collect the gas produced; and a small pneumatic trough, C D.

The tube A, about nine inches long, is narrowed two inches from the closed end, and a bulb, B, holding about 12 c. c., blown on it. The upper part of the tube contains about 25 c. c. This is fitted, by means of an India-rubber cork, into the small elliptic tin trough, C D, about three inches long, standing upon three legs. In using the apparatus, a 5 c. c. pipette is filled with the urine, and the liquid is allowed to flow into the bulb of this tube. Water is added, thus washing down the urine which adheres to the sides of the tube, and filling the bulb up to the top of the constriction. A glass rod, with a piece of India-rubber tubing about half an inch long drawn over the end of it, is then introduced, so that the India-rubber plugs up the constriction. The hypobromite solution is then poured into the upper part of the tube until it is full, and the trough is afterwards half filled with ordinary water.

The graduated tube, F, is filled with water, the thumb placed on the open end, and the tube is inverted in this trough. The glass rod is then pulled out, and the graduated tube slipped over the mouth of the bulb-tube.

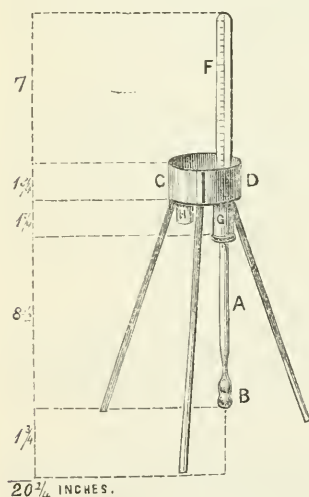
The reaction commences immediately, and a torrent of gas rises into the measuring tube. With the strength of hypobromite solution which we suggest, the reaction is complete in the cold in about ten or fifteen minutes; but in order to expedite it, the bulb is slightly warmed. This causes the mixing to take place more rapidly, and the reaction is then complete in five minutes. The reaction will be rapid and complete only when there is considerable excess of the hypobromite present. After the reaction the liquid should still have the characteristic colour of the hypobromite solution.

The simplest means of supporting the measuring tube is to have the bulb-tube corked into a well, G, which projects from the bottom of the trough about an inch downwards. The graduated tube stands over the bulb-tube, is supported by it, and rests upon the cork in the bottom of the well. It is convenient to have at the other end of the trough another well H, which will form a support for the measuring tube when not in use.

The gas collected is nitrogen saturated with aqueous vapour, and the bulb will obviously be more or less affected by temperature and pressure.

It has hitherto been necessary to make correction by calculations of some intricacy for the variations in the bulk of gas which these produce; but with the present form of apparatus

it is found that these corrections may be avoided, and the volume of gas read off at once without calculation. The reason of this is the following: When urea is decomposed by hypobromous acid, the whole of the nitrogen, as stated above, is not given off, but there is a loss of 8 per cent. at 60° Fahr., which is about the ordinary temperature of wards; however, the increase in the bulk of gas caused by the temperature, moisture, and pressure, amounts exactly to 8 per cent.; that is to say, the increase due to these causes exactly equals the loss of nitrogen due to the incomplete decomposition. In other words, if we make no correction at all, we get exactly the quantity of gas we ought to have. Hence all calculations are avoided.



The measuring tube has upon it the figures i., ii., iii. These mean 1, 2, 3 grammes of urea in 100 c. c. of urine; *i. e.* 1, 2, 3 per cent., as it may be called; so that if after experiment the level of the gas stands opposite ii. on the tube, the urine experimented upon contains two per cent. of urea.

Sugar does not interfere with the reaction, and albumen only so far that the bubbles of gas take so long to subside. It is advisable therefore to remove the albumen by boiling quickly with a few drops of acetic acid, and to filter. 5 c. c. of the filtrate is then taken and estimated as above.

For further information as to the theory and practical working of the apparatus, reference may be made to the original paper read before the Chemical Society, and published in that Society's Journal for August, 1874.

2. *Vaso-Motor Apparatus*.—In an able series of lectures recently published, M. VULPIAN has discussed, with great detail, the anatomy and functions of the vaso-motor apparatus of nerves—that *terra incognita* of physiology and medicine. M. Raymond, in the *Progrès Médical*, page 65, gives an interesting account of M. Vulpian's views, which will incite many to a study of his work. M. Vulpian, he says, gives clinical proofs of the influence exercised by the lesions of the great sympathetic nerve on the vascular system; he afterwards enters on the question of the vaso-dilator nerves. Calling to mind that the vessels are provided with muscular fibres, arranged in an annular form, and whose contraction can only occasion a diminution of the calibre of the vessel, M. Vulpian shows that experiment has taught a singular and incontestable fact, the existence of nerves whose excitation brings on dilatation of the vessels under their influence. These nerves, of which we owe the knowledge to Claude Bernard, are named *vaso-dilators*; whilst the others have received the name of *vaso-constrictors*. M. Claude Bernard demonstrated this fact whilst repeating Ludwig's researches on the submaxillary gland. He demonstrated as to the anastomotic filament furnished to the lingual nerve by the chorda tympani, that the action of the lingual or of the glandular filaments which spring from this nerve is due, an action which consists in the arrest of the salivary secretion when the lingual is cut, and in the continuation of the secretion when the peripheric end of the cut lingual nerve is irritated; the chorda tympani is therefore a type of vaso-dilator nerves.

Claude Bernard has searched for the existence of other vaso-dilator nerves. It has seemed to him that the auriculo-temporal branch of the fifth nerve, which anastomoses with the facial, had a dilating action on the vessels of the ear, and the same was the case with the nervous filaments surrounding the carotid. Claude Bernard has further pointed out the pneumogastric as determining a dilatation of the vessels of the breast, a fact which is denied by M. Vulpian. The chorda tympani does not exercise its dilating action on the vessels of the submaxillary gland alone. M. Vulpian has demonstrated, by irrefutable experiments, that this action is extended to the vessels of the tongue.

Nerves described by M. Eckhard under the name of *nervi erigentes* are also vaso-dilators. They spring from the sacral plexus, and, with the pudic nerves, proceed to the corpus cavernosum. These latter have not any action with regard to erection, whilst the former produce it; it is probable that the irritation of the erector nerves reacts rather on the arterioles than on the areolæ of the corpus cavernosum. M. Goltz has lately endeavoured to show that the nervous centre of the erector nerves is situated in the lumbar region of the spinal cord.

Many hypotheses have been proposed to explain the action of the vaso-dilator nerves. Heidenhain's experiments have shown that atropia paralyzes the action of the chorda tympani on the secretion of the submaxillary gland; and, on the contrary, leaves intact the influence of this nerve on the vessels of the gland. M. Vulpian thence concludes that there are secretory nerves; and, indeed, how can the results of this experiment be accounted for, if the existence of these secretory nerves be not admitted? These experiments annihilate the hypothesis of the attraction of blood by the tissues. Must we see, in the action of the vaso-dilators, a phenomenon like that known in physics under the name of the *interference of light*? must an inhibitory action be admitted? M. Vulpian has adopted this last view, always making the reserve, that the vaso-dilator

nerves only act on the vascular tonus by their communication with the nervous ganglia which regulate the vaso-dilators.

The next question is, as to the origin of the vaso-motor nerves. They have their principal roots in the spinal cord; but their mode of origin is not precisely known, notwithstanding the opinion of M. Jacobowitch. It results, from this relation of the vaso-motors with the spinal cord, that lesion or irritation of the spinal cord must have a great influence on the nerves, and, consequently, on the vessels; this is indeed the case, and the partial lesions of the medulla give rise to vascular constrictions or dilatations in the parts in relation by their nerves with the region of the cord where the lesion exists, and each of these modifications results from an irritation, made evident either by a dilatation or a constriction, whence the variableness of the phenomena observed. It is now easy to understand how irritation practised on the surface of the body, for instance, acts by reflex action, passing by the spinal cord to the dilator or to the constrictor nerves. Here we find the explanation of a host of phenomena; for instance, of the reflex vascular dilatations invariably produced whenever the subcutaneous cellular tissue, the muscles, etc., are laid bare. It is a known fact, that these parts become the seat of a very evident congestion, and dilatation is not confined to the exposed region.

The opinion which has been adopted by a large number of physiologists, that there is only one vaso-motor centre, the medulla oblongata, is rejected by M. Vulpian on the ground of his experimental researches. In his opinion, there are a series of vaso-motor centres in the bulb, and specially in the spinal cord. If it be so, the question arises, whether the spinal cord and the medulla oblongata are the principal foci where the vaso-motors originate, and the only ones. Experiment has proved that the sympathetic ganglia may also be the seat of origin of the vaso-motor nerves and centres of reflex actions for these same nerves.

M. Vulpian afterwards shows the existence of the vascular tonus—that state of semicontraction necessary to the small vessels, and which gives a certain elasticity to their muscular coats. With regard to the question as to the mechanism by which the spinal cord exercises its action on the heart and vessels, M. Vulpian takes up the history of the subject to the discovery of Ludwig and Thiry, and establishes a very important physiological part of the question; that is, with regard to the depressor nerves. It is now well known that the spinal cord acts on the heart by the medium of the vaso-dilator and vaso-constrictor nerves, by augmenting and diminishing the arterial tension. These facts lead him to study the influence of the vaso-motor nervous system on the pressure of the blood, on absorption, on erection, on reflex congestion, on erectile tumours, and finally on the glands. The action of the nerves on the glands puts the importance of the physiological action of the vaso-motors in full prominence, explains many hitherto unknown actions, and will probably throw light on many more. The studies contained in this volume relative to the action of the nerves on the secretions, on the stomach, intestines, kidneys, and liver, are proofs that these expectations are by no means unwarrantable.—*Brit. Med. Journ.*, Feb. 20, 1875.

3. *Studies in Biogenesis.*—Dr. ROBERTS's paper is divided into three sections. The first is on the sterilization by heat of organic liquids and mixtures. He finds that when beef-tea or a decoction of turnip is boiled for a few minutes and afterwards preserved from extraneous contamination it passes into a state of permanent sterility. This state is characterized by loss of power to *originate* organisms with conservation of the power of *nourishing and promoting* the growth of organisms. All organic liquids and mixtures seem capable of being brought to this state by exposure to a heat of 212° F., but the length of time during which exposure to this heat is necessary to induce sterilization varies greatly according to the nature of the materials; ordinary infusions being sterilized in ten minutes, whilst milk, chopped green vegetables in water, pieces of boiled egg in water, and other mixtures, were not sterilized unless the heat was continued for twenty to forty minutes. Hay infusion was sterilized, like other infusions, by boiling for a few minutes, but when rendered

alkaline by ammonia or liquor potassæ it was not sterilized except after an exposure to 212° F. for more than an hour; sometimes it germinated after two and once after three hours' exposure. The two factors—duration of heat and its degree—seem to be mutually compensatory, a longer exposure to a lower heat being equivalent to a shorter exposure to a higher temperature. Speaking roughly, an exposure for an hour to a heat of 212° F. appeared to be equivalent to an exposure of fifteen minutes to 228° F.

Section 2 is devoted to the capabilities of the normal tissues and juices to generate Bacteria and Torulæ without extraneous infection. Egg albumen, blood serum, blister serum, milk, grape, orange, and tomato juice, turnip, and potato tissue—these were rapidly removed from their ordinary sites and placed in sterilized tubes, and kept at temperatures varying from 60° to 90°, and the rarity with which Bacteria and Torulæ were developed when the last conditions of the experiment were carefully preserved led to the conclusion that the normal tissues of plants and animals were incapable of breeding Bacteria and Torulæ except under the stimulus of extraneous infection.

The third section is devoted to the bearing of these facts, which is that ordinary air and water contain, in addition to their proper elements, multitudes of particles capable of provoking germination. Dr. Roberts is therefore a panspermist, and he observes that were it hereafter established that bacteria and fungoid vegetations do under exceptional instances arise abiogenically, it would not overturn the panspermic theory, but would merely limit the universality of its application.—*Brit. and For. Med.-Chirurg. Rev.*, Jan. 1875, from *Proceed. Roy. Soc.*, vol. xxii. p. 289.

4. *Dependence of the Arterial Blood-pressure on the Quantity of Blood.*—WORM MULLER'S experiments on dogs have established the remarkable fact that the vascular system can accommodate very large quantities of blood without there being any marked increase of the normal arterial blood-pressure, which was always measured in the carotid. More than sixteen per cent. of the body weight of the animal in blood could be injected into the jugular vein without (after the termination of the transfusion) the blood-pressure in the beginning of the aortic system becoming markedly higher than it was in the normal dog before the commencement of the experiment, *i. e.* the quantity of blood that the animal originally had, could be increased to three times its original amount without producing any marked increase in the arterial blood-pressure. Within certain limits this holds good, if the blood-pressure had been diminished either by section of the spinal cord, or by blood-letting. As soon, during the injection, as the blood-pressure had reached the value noted before the beginning of the experiment, the addition of several quantities of defibrinated blood did not raise the pressure above the normal. That the blood, in spite of the overfilling of the vascular system, remained within it, and that no important exit of blood or blood-plasma took place through the walls of the vessels, was established by the negative results after very careful *post-mortem* examination. To dispose of the idea of a simple serous exudation, the thoracic duct was opened to observe the out-flow of lymph during and after the injection of the defibrinated blood. The rapidity of the lymph current increased with the quantity of blood added, but a sinking of the blood-pressure with increased quantity of lymph was not observed. A direct proof of the overfilling of the vascular system is given in the effects of blood-lettings in an animal into which blood had been previously transferred. From such an animal quantities of blood, not sufficient to endanger the life of the animal, were withdrawn from the carotid, and from this animal, overfilled as it was with blood, on continuing the blood-lettings until death ensued, and even by pressing the limbs and body of the moribund animal, scarcely ever was the quantity of blood transfused again recovered. The results of the *post-mortem* examination showed no marked overfilling of the arteries, and only in the veins of the abdomen was there any appreciable overfilling observed. The author is of opinion that after transfusion, the blood is specially to be found in the capillaries distributed more or less over the whole body. He is further of opinion that the increase in the capacity of the vascular system is accomplished by the help of the capillary networks, of the smallest veins, and

the smallest arteries. Very probably throughout the whole body under normal conditions, many capillaries entirely empty or only partially filled exist, which become permeable to the blood-current, after considerable increase of the quantity of blood. A distension of the capillary networks is not a necessary consequence of the overfilling. This occurs, however, under very pronounced filling of the vascular cavities with blood, and as the author believes, at those places and in those organs, such as in the thoracic and abdominal cavities, where the overfilling is most observable.

Even with pronounced filling of the vascular system no change in the capacity of the heart for doing work (*Leistungsfähigkeit*) occurred. The pulse-beats remained with increased percentage of blood, either unchanged both in animals with divided and in those with intact spinal cord, or they were diminished so irregularly that the latter point could only under certain circumstances be brought into account. The lungs were found congested *post-mortem*. An increased friction of the blood in the lungs is not alone sufficient to explain the non-increase of the blood-pressure. Neither congestion of the right heart nor of the large veins which open into it was found.

If after transfusion the quantity of blood in the transfused animal was diminished, the paradoxical phenomenon was exhibited that before one-half of the blood injected was recovered, the arterial blood-pressure sank much below the *niveau* which it had before the transfusion. By continuing the blood-letting the animal could be brought near to death, even though the quantity of blood which it had, surpassed by several per cents. of its body-weight the original (normal) quantity of blood; in other words, animals which had received from one to three times their original quantity of blood were much more sensitive to blood-letting than in the normal condition. Absolutely, transfused animals yield more blood on being bled to death, which is easily explained by the strongly pronounced filling of the vascular system, but relatively they require much larger, perhaps twice as large, or may be still larger quantities of blood (than in the non-transfused condition), in order to preserve the normal blood-pressure, *i. e.* that necessary for life. In an animal which has been bled from both carotids, until nearly dead, even after blood has ceased to flow from the divided arteries, blood again flows from the carotid on dividing the cervical spinal cord (this observation I have repeatedly verified. *Rep.*), and the stream is increased on raising the posterior extremities and pressing on the abdominal and thoracic walls. The author then discusses the upper and lower limits of the physiological filling of the vascular system, and then follows a short chapter on plethora and transfusion.—*Journ. Anat. and Phys.*, Nov. 1874, from *Ludwig's Arbeiten*, viii. 159.

5. *Acid of the Gastric Juice*.—M. RABUTEAU, at a late meeting of the Academy of Sciences in January last, communicated the result of experiments made by him to determine the nature of the acid which causes the acidity of the gastric juice. His results conform to those of Braconnot, Prout, Lassaigne, and Schmidt, that the gastric juice owes its acidity to hydrochloric, and not to lactic acid.—*Le Mouvement Médical*, Feb. 6, 1875.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Properties of Jaborandi*.—An additional supply of this new and remarkable drug has been lately received both in France and England, which has enabled investigators to determine more definitely its source, its properties, and to some extent its therapeutic application.

The results of these investigations are so very interesting as to seem to require a full account of them to be given here.

Prof. GUBLER, at a meeting of the *Société de Thérapeutique*, exhibited

(*Gazette Hebdom.*, Feb. 19, 1875) several branches, with the leaves attached, of the plant, showing that the true medicinal jaborandi is the *Polycarpus pin-natus*. The name jaborandi is, however, given in Brazil to many other plants, which should not be confounded with this more active species.

The indications for the employment of this drug cannot yet be fully stated, according to Prof. G., but some of them are clear enough, viz., the anasarca and œdema met with in rheumatism, albuminuria, and diseases of the heart. Under its use M. Gubler has found serous effusions diminish, and by it he has cut short attacks of influenza. One of the most remarkable results which he has observed has been its effects on chronic bronchitis and emphysema with asthmatic paroxysms. In five or six cases the amelioration has been instantaneous. He met with the first of these in 1873, in a man to whom a cup of tepid infusion had been administered during an excessive paroxysm of asthma, and who fifteen minutes afterwards began sweating and expectorating. Almost immediately after this his respiration became quite easy, the patient declaring that his malady had been taken from him as with the hand. The jaborandi may also be advantageously given in subacute rheumatism; as also as a salivary revulsive, like calomel.

There seems to be a very curious relation observed (*British Medical Journal*, Feb. 27, 1875) between jaborandi and belladonna, a relation partly of analogy but mainly of opposition. Jaborandi resembles atropia in quickening the pulse, flushing the face, and in exerting a more decided influence on adults than on children. On the other hand, it is diametrically opposed to atropia in its action on the salivary, sudoral, and mammary secretions, on the pupil, and on the minute arteries. Further, the tendency of belladonna to cause delirium, contrasts with that of jaborandi to cause prostration and sleepiness.

Several of these points have been studied in some detail, and merit further consideration. And first, as regards its sialagogue action: the influence of atropia in checking the flow of saliva from the submaxillary gland has been shown to be independent of the vaso-motor nerves. Heidenhain's experiments, which have since been repeated and extended by others, render it tolerably certain that this phenomenon is due to paralysis of the terminations of the secretory filaments of the chorda tympani. The effect of muscarin (the active principle of the *agaricus muscarius*) has been shown by Schmiedeberg and Koppe to be exactly antagonistic to that of atropia, i.e., to cause profuse salivation by stimulating those nerve-ends which are paralyzed by the latter alkaloid. The mode of action of jaborandi seems in this respect to be identical with that of muscarin. It has been proved, both experimentally and clinically, that atropia is able to arrest the flow of saliva caused by jaborandi; and Ringer found that a dose of the latter drug speedily removed the dryness of the mouth in a case of accidental poisoning by atropia. The antagonism between the two is quite as definite in relation to the secretion of sweat as to that of saliva. Sweating after jaborandi may be prevented or checked by the subcutaneous injection of one-hundredth of a grain of atropia. Vulpian has even gone so far as to found a hypothesis concerning the nervous mechanism by which the perspiratory function is regulated, on the analogy of the antagonism in the two cases. He thinks it probable that the activity of the sweat-glands is under the control of nerve-fibres analogous to those supplied to the submaxillary gland by the chorda tympani, and that it is more independent of the vaso-motor system than is commonly supposed.

Next, as regards the eye: belladonna acts, not only on those branches of the third nerve which supply the circular fibres of the iris, but on those which supply the ciliary muscle also. Hence the dilatation of the pupil is accompanied by palsy of accommodation, making near objects seem blurred and indistinct.

The particulars bearing on the above statements will be found more fully detailed in the subjoined articles.

7. *Recent Experiments with Jaborandi.*—Dr. WM. MARTINDALE gives an interesting account (*Pharmaceutical Journal*, Jan. 16, 1875) of an experiment
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made on himself with some of this drug recently obtained from Pernambuco. Compared, he states, with what he received from Paris, the leaflets are much more pungent in taste, and much more active physiologically. "When chewed the taste is piquant, and excites a glowing heat on the tongue, like that caused by pellitory root. He also found, from working with it, that it irritates the skin when applied externally. On the inner surface of the bark of the root, white shining crystals are distinctly visible; but, as Dr. Attfield is about to make a chemical investigation of the different parts, it is premature to offer any opinion about these. Therapeutically, Dr. Ringer is continuing his investigations at the University College Hospital.

"Having heard doubts expressed about the activity of the jaborandi last received, as compared with the results obtained in the first trials I witnessed at University College Hospital, I became somewhat sceptical about its efficacy, and, therefore, expecting to get little results, tried it upon myself. To me the effect seemed simply marvellous. I made an infusion of sixty grains of the bruised leaf in five ounces of boiling water, let it stand fifteen minutes, and strained it. On pouring the water upon the drug, I noticed that the characteristic odour almost entirely disappeared. The infusion was of a pale sherry colour, had a mawkish bitter taste, but did not excite the glowing heat upon the tongue that the leaf itself did; this I thought strange, and on tasting the dregs I found they still retained their pungent taste when chewed. It was evident to me that, if its diaphoretic properties depended on the principle having this pungent taste, boiling water does not extract it. At 11.30 P. M., on retiring to rest, I swallowed as much of the dregs as I could, probably fifty out of the sixty grains used, and washed them down with the infusion. In five minutes I felt a glow, an increased circulation, an uneasiness in the head, became restless, and the secretion of saliva began to increase. At 11.45, a quarter of an hour after taking the dose, I was perspiring freely. The salivation and perspiration continued to be profuse, until my sight became blurred. At a distance of four feet I could see my wife, but could not distinguish her eyes. On this occurring I became a little anxious, as I had evidently taken an overdose. I requested that Dr. Ringer might be sent for; he came about 12.15 A. M. The impaired vision still continued, but I was glad to find that it was only at a distance—near objects I could see distinctly enough. The pupils of the eyes were slightly dilated, I was informed. The pulse when first noted was 96, and got up to 104. The temperature was not taken. The depression was never very great, but a little before Dr. Ringer came I began to shiver, more clothes were put on the bed, and some spirit and water given to me. The excessive perspiration still continued from all parts of the body. A Turkish bath, which I have frequently had, and seen others have, was nothing to it; the saliva for a time required almost constant ejection; the secretion of this from the glands in the cheeks caused a kind of collapsed feeling in them. My speech was so affected that articulation was both difficult and indistinct. Eventually, about 1 A. M., I was sick, and vomited at first a quantity of saliva which I had swallowed. By putting my finger in my mouth vomiting was further excited, until a portion of the jaborandi returned. The effects were now subsiding; more spirit and water were given to me, and my night-shirt, soaked with perspiration, was changed. I was put into a warm blanket, and about 1.40 A. M. I fell asleep and slept a quiet sleep till 6 A. M. The pulse on awakening was 88—normally with me it is 80. I got up about 7.30 A. M., and although I felt squeamish all next day, I was able to attend to business as usual. When the action was at its height, on uncovering my arm, I am informed the perspiration passed off in steam from my hand and night-shirt sleeve. The saliva collected, which was distinctly alkaline, measured sixteen ounces; in addition to which, a quantity had flowed on to the pillow while I slept, as it was quite wet in the morning. I came to the conclusion that I should not like to pass through the ordeal again. My thanks are due to Dr. Ringer, whose presence and kindness greatly relieved my anxiety.

"We have undoubtedly in jaborandi a drug which produces a marked physiological action; how far it will prove useful therapeutically in cases of fever, diabetes, and other diseases, remains to be seen. A drachm dose of the last

received is no doubt excessive, that is if the whole be swallowed. The strained infusion, from what I hear, produces but little effect."

In the *Lancet* for Jan. 30, there is a communication from Drs. SYDNEY RINGER and ALFRED P. GOULD, giving much additional information and the results of numerous trials with it.

"We have recently," they state, "made thirty-seven careful observations; twenty on adults, whose ages varied from twenty to forty-five; and seventeen on children, between three and ten years of age. To the adults we gave sixty grains; to the children thirty, and sometimes sixty. These investigations have led to the detection of several new and interesting effects of jaborandi. They lead us to conclude that some of M. Robin's statements are inaccurate. They show us that children are very little affected by this drug. We administered generally thirty, sometimes sixty grains, giving both the solution and the dregs; and yet, strange to say, this dose often failed to produce any effect. In two cases only was the sweating abundant; in eight it was slight—in most, very slight, making the skin only a little moist; and in seven cases it excited no perspiration. Salivation was generally absent, and never more than to make the mouth rather moister than usual. There was very little flushing of the face, and this occurred only when perspiration was induced. The pulse was but slightly increased in frequency, from ten to sixteen beats, and this occurred only when the remedy acted on the skin. When the pulse was quick (and several of these children were convalescent and weak), we noticed that the pulse was still less influenced, and sometimes even fell. In our earlier observations on older children, where the effects were well marked, the pulse was much more quickened. When the skin was rendered moist, the temperature generally fell, the fall varying from 0.6° to 2° F. In eight of these cases it is noted that the child vomited, usually two hours after the administration of the medicine, but sometimes sooner. Occasionally the vomiting was repeated three times. When the vomiting was long delayed none of the dregs of the medicine were rejected. Many of the children were sleepy during the stage of depression. In no instance were the bowels affected, nor did the medicine excite any cough. To sum up: in many cases the children were not at all affected in their rest; the symptoms were very slight, most strikingly so when compared with the marked effects of jaborandi on adults.

"In the twenty observations made on eighteen adults, the perspiration in every case but two was most profuse, and in these exceptional instances it was free. It began in about ten minutes, and in one instance only was delayed for an hour. Salivation was absent in two cases only; in three cases it was slight; in the rest profuse, amounting in one experiment to 27 ounces. In one case only the pulse was unaffected, though there was marked perspiration. In the rest the pulse was quickened from 12 to 40 beats, the average being 20 beats per minute; the average increased frequency lasting two hours and a half.

"The temperature was taken in nine cases, three in the axilla, the rest under the tongue. In every instance the temperature fell during the sweating, the fall varying from 0.4° to 1.4° , the average being 0.9° , and lasting from one hour and a quarter to four hours and a half, and then becoming normal; that is, the temperature reached the point observed before the medicine was given. This was administered between 9 and 10 A. M. The average duration of the fall was three hours and a quarter. In one instance only did the temperature rise, and then only 0.4° , the rise lasting a very short time. On this point our observations are opposed to those of M. Robin, who states that the temperature rises at first, and then remains depressed two or more days. This statement being quite at variance with our observations (for we have said that in a few hours the temperature recovered itself), we noted the temperature in three men every three hours for three days before the administration of the drug, every hour during the action of the medicine, and every two hours for two days after the medicine. We found that in a few hours the temperature returned to the point noted before the drug was given, and on the two following days was the same as on the two days previous to the experiment. In one case only the flush of the face and neck was absent, and in every case save two the flush

was followed by pallor and more or less depression, or even prostration. In half the cases we noticed slight cough due to increased bronchial secretion, but this was always slight. In no instance did the medicine relax the bowels, so that its action on the intestinal mucous membrane must be slight. In one-half the cases the patients became decidedly sleepy, this occurring during the pallor, one, two, or three hours after the administration of the drug. A sensation of sickness, and sometimes decided nausea, occurred in two-thirds of the cases. In several cases the sight was decidedly affected. Mr. Martindale first drew our attention to this fact. He took, experimentally, a free dose of the medicine, and we saw him an hour and a half afterwards, when he said everything at a little distance looked hazy. On testing his sight we found that he could read moderate-sized type at about a foot distance, but at two feet the type became indistinct. This led us to investigate the effect of jaborandi in this respect in other persons. In three other cases, after the internal administration, the sight became decidedly affected; but the size of the pupil was unaltered. Mr. Martindale prepared for us an extract dissolved in glycerine, which we introduced into one eye of thirty-one persons. In nineteen cases the pupil became decidedly contracted, the amount of contraction varying, in some being slight, in others reduced by one-third, in two instances to one-half. We noticed that the pupil acted sluggishly in eleven cases. In a few hours the contracted pupil regained its natural size; but in one case the contraction was noticed twenty hours after the application. M. Robin finds that the tears and the nasal secretion are increased; but in four only of our cases were the lachrymal and nasal secretions increased sufficiently to attract our attention or that of the person experimented on. In eleven cases complaint was made of pain over the pines, and in some instances this was severe, and was generally accompanied by a strong desire to pass water, which afforded relief. A good deal of trembling, especially of the upper extremities, followed in two instances after the administration. This was the case with Mr. Martindale, which did not appear to be due to nervousness. One man complained of much throbbing of the head the day following the experiment. Many patients complained of feeling alternately hot and cold, or chilly.

"It will be seen that our later observations prove a marked antagonism between jaborandi and belladonna. Belladonna checks the secretion from the skin, the salivary glands, the mucous membrane of the nose, bronchial tubes, stomach, and intestines, and dilates the pupil and contracts the arterioles; jaborandi, on the other hand, increases enormously the perspiration and saliva, and, in a much less degree, the secretion from the mucous membrane of the nose, the bronchial tubes, and the stomach and intestines. Robin asserts, moreover, that it lowers arterial tension, probably by paralyzing the vaso-motor nerves, and thus causing dilatation of the arterioles. Belladonna excites delirium, whilst jaborandi often produces sleep. This antagonism was well displayed in four instances. On three occasions, to three different men, we administered sixty grains of jaborandi, and when the perspiration and salivation were profuse we injected subcutaneously $\frac{1}{100}$ of a grain of atropia. In five minutes the perspiration and salivation were considerably diminished, and in from ten to twelve minutes the skin was preternaturally dry and the salivation was checked, but in one case continued a little after the cessation of the perspiration. It curiously happened that a lad was admitted into University College Hospital poisoned by atropia. He had taken one grain of the alkaloid five hours before treatment. His tongue and mouth were quite dry. A quarter of an hour after taking thirty grains of jaborandi his mouth became much less dry, and in an hour he was sweating freely and his mouth was naturally moist.

"Belladonna, it is well known, arrests the secretion of milk, and we were anxious to ascertain whether jaborandi was antagonistic to belladonna in respect to its influence on this secretion. We administered thirty grains of jaborandi to a woman thirty-eight years old, confined of her ninth child four months previously. During suckling she had very little milk, and the quantity had become much less of late. We gave her the medicine at 10 A. M. She had suckled her child seven hours before. In ten minutes the drug produced its

usual symptoms; in half an hour her breasts, which previously were flaccid, became tumid and distended, and on pressure yielded considerably more milk. In forty minutes the increase was still more marked, jetting forth in four or five streams. In eighty minutes the milk was less abundant, though considerably more so than before the experiment. The woman herself noticed the decided increase of her milk. To another woman, aged twenty-five, whose child is thirteen months old, we gave two doses of thirty grains, as the first had no effect. She emptied her left breast every ten minutes by pressure, and each of the three first emptyings yielded 40 minims. As soon as perspiration and salivation became free the quantity rose to 80 minims. The next time yielded 100 minims, the following 155 minims, the next time 80 minims. The salivation and perspiration at this time ceased. The next observation yielded 125 minims, the next 87 minims, the next 70 minims, and the last 40 minims. This woman, whose case is not included in those given before, complained of severe pain over the pubes, with desire to urinate, the pain immediately ceasing after micturition.

"In some of their effects, however, jaborandi and belladonna agree. Thus, both flush the face and quicken the pulse; and both affect children much less than adults. Belladonna quickens the pulse by its paralyzing influence on the pneumogastric, and possibly by stimulating the sympathetic nerves. We have no evidence that jaborandi paralyzes the pneumogastric, or stimulates the sympathetics supplying the heart, but M. Robin has shown that it lessens arterial tension, probably by dilating the arterioles; and it is well known that dilating the arterioles, and thereby allowing the blood to pass more quickly from the arterioles to the veins, quickens the heart-beats. Hence it is very probable that the quickening of the pulse by jaborandi is due to its influence on the arterioles; and thus, instead of affording an instance of similarity of action between these two drugs, affords another example of their antagonism, for belladonna contracts the arterioles. While referring to the relations of these two drugs, we may point out that both sometimes affect the bladder. Jaborandi, as we have seen, causes pain over the pubes, with desire to pass water, the pain subsiding when the bladder is emptied. These facts render it probable that jaborandi causes contraction of the bladder, for it does not augment the quantity of the secretion.

"Jaborandi probably paralyzes the sympathetic nerve, the effect being shown by the deep flushing of the face. M. Robin ascribes its effects to its influence on the sympathetic. But there are various reasons to doubt this conclusion. It is improbable that mere increase of blood could cause so great an increase of sweat and saliva. Belladonna flushes the face, but completely arrests the sweat. Again, it has been experimentally shown that belladonna will check the secretion from the submaxillary gland, although by irritation of the chorda tympani nerves the bloodvessels supplying the gland are dilated and full. It is true the flushing from jaborandi immediately precedes the outbreak of perspiration, but soon the flush declines, and is succeeded by marked pallor, yet the perspiration continues for hours, being often even more abundant than during the flush. To test whether the effects of jaborandi wore off by repetition, we administered sixty grains to a man on three consecutive days, and the symptoms were as marked on the third as on the first day. On each day, in a few hours, the temperature recovered from the depression, rising to the height observed before the medicine was given. We should have continued this investigation some days longer, but the man appealingly protested that we were giving him more than his fair share of experimentation. In two other cases we gave sixty grains on two consecutive days, and the effects were as marked on the second as on the first. In one of these cases the temperature was observed, and on both days the temperature in a few hours recovered from its depression. These cases strikingly show the erroneousness of M. Robin's assertion that jaborandi causes a depression on the day following. On the other hand, we found the effects soon ceased in children, and sometimes the second dose failed to excite perspiration.

"It may be suggested that the perspiration was due to the nausea and vomiting excited by the drug. Those who witnessed the effects of this medi-

cine will certainly not ascribe them to the depression from nausea: but we may add that the perspiration was too profuse to be due to mere depression and nausea. Moreover the perspiration occurred often some hours before the nausea or depression set in. Again, in children, though the drug in some cases caused much and repeated vomiting, there was no perspiration; moreover, in many cases, especially among adults, the full physiological effects of the drug were obtained without either nausea or depression.

"We have tried in several cases a tincture from the leaves, and in one case an extract made from the tincture, and found these preparations equally effectual as an infusion with the dregs. We find also that a strained infusion is equally efficacious as one with the dregs, from which we conclude that the active principle is not the oil, so abundant in these leaves. In one case we administered a strained infusion of the root without any effect, and in three cases an infusion made from the bark of the stem, giving also the dregs. The last preparation is also active, though it appeared to us to excite more vomiting, and to cause more depression than the preparation from the leaves."

8. *Physiological Effects of Jaborandi*.—At the meeting of the Biological Society of Paris on November 28, M. CARVILLE communicated the results of some experiments on the action of jaborandi, made by him in M. Vulpian's laboratory.

These experiments were made from a purely physiological point of view, with the intention of studying the mechanism of salivary hypersecretion in the submaxillary gland in dogs. The facts noted up to the present time show that an injection of twenty cubic centimetres (a little more than five drachms) of water, in which two grammes (thirty grains) of jaborandi leaves had been infused, into the crural vein of a dog which had had curara administered to it, and then been submitted to artificial respiration, brought on an excessively copious secretion of saliva, in less than a quarter of an hour. By means of a canula inserted into Wharton's duct, the saliva may be collected both before and after the injection, during a quarter of an hour; and it was found that this secretion increased to four cubic centimetres under the influence of jaborandi; the saliva likewise becoming thick, thready, and opalescent. A subcutaneous injection of five centigrammes of atropia immediately stops this secretion. Division of the lingual nerve, and of its branches going to the submaxillary gland, has no effect whatever on the action of jaborandi on this gland.

Jaborandi has an analogous action on the urinary excretion; a canula placed in one of the ureters shows that this excretion was increased in the proportion of from one to two cubic centimetres.

Experiment has also demonstrated that intravenous injection of water in the same proportion has no influence whatever on the salivary secretion. From four to five hundred grammes are required to obtain a very temporary and trifling increase of salivation. In fine, the experiments hitherto made show that the action of jaborandi on the submaxillary gland of the dog does not affect the vaso-motor systems.

M. Carville proposes in further researches to resolve the question, whether this action takes effect on the peripheric extremity of the nerves of the gland, or on the secretory elements of that organ. M. Bernard drew attention to the fact that the conclusion to be drawn from M. Carville's experiments would be, that jaborandi does not act on the secretory nerve of the submaxillary gland. It may, however, act on the sympathetic nerves, inasmuch as the salivation observed after section of the cord of the tympanum was, in M. Carville's experiments, exactly like that produced by cervical sympathy. M. Bernard has shown that the saliva in these cases is viscid and rather copious, and M. Carville has found these characteristics present in his experiments.

M. Rabuteau remarked that he inclines to believe that jaborandi does not act on the nervous system, but on the striped muscular fibres. In the case noted, it must have been the muscles of the arterioles which were paralyzed, since there are no striped fibres in any other part of the parotid gland.—*Lond. Med. Record*, Dec. 23, 1874.

9. *Effects of Jaborandi on the Eye*.—Mr. JOHN TWEEDY has carefully investigated the effects of jaborandi on the eye, and for that purpose applied some of the extract on the conjunctiva. From these experiments he concludes "that jaborandi locally applied to the eye causes, (1), contraction of the pupil; (2), tension of the accommodative apparatus of the eye, with approximation of the nearest and furthest points of distinct vision; (3), amblyopic impairment of vision from diminished sensibility of the retina. These effects, however, do not last long. In his own case the approximation of the near and far points of distinct vision had declared itself in a quarter of an hour, and reached its maximum in about forty minutes. It then gradually subsided, and had entirely passed off and the eye resumed its normal state in about an hour and a half."—*Lancet*, Jan. 30, 1875.

10. *Boldo*.—This is one of the latest novelties offered to our materia medica. According to the *Chemist and Druggist*, the leaves are used on account of the aromatic oil they contain. The alkaloid discovered has been called boldine by Claude Verne and M. Bourgoïn, the joint discoverers. The tree is indigenous to the New World; the leaves are covered on their surface with small glands. In South America, the plant is a popular remedy against syphilis and diseases of the liver. The essential oil is contained in cells, which are met with in nearly every part. The oil-vessels are perfectly spherical and of large diameter. The volatile oil is the most abundant product, as much as two per cent. having been frequently obtained, and is a mixture of various bodies. The preparations used are (1) alcoholic extract; (2) aqueous extract; (3) essential oil; (4) tincture; (5) wine with the Madeira; (6) syrup; (7) elixir. The leaves and flower-stems are alone employed. The dose of the wine is one tablespoonful to a wineglassful once or twice a day. Vomiting is induced by two large doses.

11. *Therapeutic Action of Ipecacuanha and its Alkaloid*.—Dr. POLICHRONIE (*Thèse de Paris*, 1874) has made a series of very interesting researches for the purpose of discovering the mode of action of ipecacuanha and of emetia. The clinical facts ascertained confirmed M. Chouppé's result. M. Polichronie's conclusions are as follows: Emetia is the really active principle of ipecacuanha. All the physiological, therapeutic, and toxic properties of this plant are due to the presence of this alkaloid. Ipecacuanha administered in injections, in dysentery as well as in diarrhœa, possesses just as powerful properties as when it is administered by the mouth according to the Brazilian method. Injections of ipecacuanha form one of the best imaginable treatments for infantile cholera, and may be borne for a considerable time without weakening the little patients. In the diarrhœa of tuberculosis, injections of ipecacuanha give good results at all stages. This medication may also be advantageously employed to combat the profuse perspiration of phthisis. Emetia is a very toxic substance; it kills animals in two ways, sometimes by the prostration of the nervous system which it causes, sometimes, when given in small doses, by the intense enteritis which it brings on. Two hypotheses may explain the favourable action of ipecacuanha in diarrhœa: either a constrictor action on the vessels which would diminish the abundance of the secretions, or a substitutive action resulting from the inflammation of the mucous membrane. There is, however, no vaso-constrictor action, as demonstrated by the experiments made on the nerve of the submaxillary gland, and on the arterial tension. The production of inflammation of the gastro-intestinal mucous membrane, and the length of time after which vomiting appears, seem, on the contrary, to plead in favour of the second hypothesis. Emetia brings on vomiting at the moment it eliminates itself by the gastric mucous membrane, as proved by the delay of the sickness and even more frequently its entire absence, after the section of the two vagus nerves; in this respect it acts quite differently from apomorphia and tartar emetic. These two substances, in fact, cause vomiting as quickly when the two nerves are cut as when they are intact. Finally, physiological and chemical researches into the action of this drug still more plead in favour of the elimination of the emetia by the gastro-intestinal mucous membrane. Emetia has no direct vomitive action on the central nervous system, which is proved by direct injections of

this substance into the cerebral arteries. It may, therefore, be admitted that in diarrhoea emetica acts by substituting a true inflammation leading to spontaneous cure for pathological inflammation; its effect under these conditions will be in all respects comparable to that of purgatives or of nitrate of silver. A vaso-motor action can no more be admitted in the perspirations, and we must believe either that by eliminating itself by the sudoriparous glands in tends to dry up their secretion, or that it acts by the revolution it produces in the digestive tube.—*London Med. Record*, Jan. 27, 1875.

12. *Therapeutic Use of Nitrite of Amyl*.—Dr. FÜCKEL recommends the use of nitrite of amyl in cardialgia, in an article in the *Deutsches Archiv für Klinische Medizin*, 1874. In all cases not complicated with gastric ulcer, the inhalation of a few drops was followed by the disappearance of the pain in a few minutes. The pain, it is true, sometimes returned in half an hour or later; but it was less severe, and always ceased on another application of the remedy. The author also met with nearly equally satisfactory results in the neuralgic disorders accompanying menstruation. He also relates a case of so-called rheumatic tetanus, in which the attacks ceased after the inhalation, three times daily, of two drops of the nitrite of amyl.—*Brit. Med. Journ.*, Jan. 30, from *Centralblatt*, No. 57, 1874.

13. *Apomorphia and its Physiological and Therapeutic Properties*.—There has been much discussion for some time past respecting apomorphia and its physiological and therapeutic properties. Apomorphia, or rather the hydrochlorate of apomorphia, has chiefly an emetic action. It appears from many experiments made in the first instance in Germany and England, and more recently in France, that apomorphia produces vomiting, by what channel soever it reaches the organism, but that its effects are more prompt and more certain when it is introduced directly into the blood by intravenous or subcutaneous injection. If given by the mouth, the dose must be increased, and the effects are less certain. From the assemblage of facts known up to the present time, it would appear that apomorphia may be employed in subcutaneous injection without producing local accidents such as inflammation of the skin, consecutive abscesses, etc.; nor does the process seem to be very painful. The principal results obtained according to the reports of the medical men who have employed it, and who agree as to its principal points, are as follows: During the two or three minutes immediately following the injection, the patient does not feel anything. Soon a sensation of weight at the stomach, followed by a slight pain in the head, comes on. Then salivation becomes copious, the body is covered with perspiration, one or two efforts at vomiting, without any result, occur, and at the third, or more rarely the fourth effort, the patient vomits three or four times successively; then comes a period of calm. The vomitings return after an interruption of five or six minutes, followed by another interval of calm, and the same scene is repeated five or six different times, to terminate definitely at the end of about half an hour, and to give place to a very quiet sleep, lasting from half an hour to an hour. Such, in brief, is the usual order of the effects produced by the hydrochlorate of apomorphia, according to M. CHOUPE's paper on the subject, published in the *Gazette Hebdomadaire* for December, 1874, which contains all that is known on this new therapeutic agent.

The hydrochlorate of apomorphia has been injected in doses of from six to twelve milligrammes ($\frac{9}{16}$ to $1\frac{1}{2}$ grains), according to circumstances. Some experimentalists have fixed the dose at ten milligrammes ($1\frac{1}{2}$ grain) for an adult male, eight milligrammes ($1\frac{1}{8}$ grain) for a woman, and six milligrammes ($\frac{9}{16}$ grain) for a child. According to M. Choupe, one centigramme ($1\frac{1}{2}$ grain) ought to be considered as the average dose for an adult. It must, however, be noted that a state of impending syncope, of such a nature as to cause grave apprehensions, has already been observed in several patients. A case in point is reported in the *Gazette des Hôpitaux* of January 16, by Dr. Brochin, with the intention of warning practitioners against one of the possible dangers of this new drug. A woman, forty years old, went into the hospital at Geneva, on October 22, complaining of gastric troubles without fever. After some days,

she was attacked by sore throat and complete anorexia. The tonsils were red and swollen, and the tongue very much furred. A hypodermic injection of three or four milligrammes of hydrochlorate of apomorphia was administered to her in the sternal region. The pulse was full and marked one hundred beats. In four minutes the patient felt slight uneasiness, and a little vertigo; she said she felt her head turning round and becoming stupid. She turned pale, became insensible, her pulse became extremely weak, intermittent, and then imperceptible; the pupils were dilated, and the respiration seemed to be entirely suspended. Slight tonic convulsions showed themselves in the left corner of the mouth and in the left cheek. The patient became inert, and did not answer to the questions addressed to her. When M. Prevost, under whose care she was, saw these alarming symptoms, he had recourse to every available means of exciting reflex action, such as sprinkling with cold water, inhalations of ammonia, energetic frictions, mustard poultices, etc. The patient recovered consciousness in three minutes and vomited twice, after which she again fainted, became extremely pallid, and the pupils were alternately dilated and contracted. Counter-irritation was again tried, and she was also electrified with an induction-current on the anterior portion of the chest. Improvement set in and gradually increased, until in about half an hour fresh vomitings followed by fainting again came on. Brandy and wine were given to the patient. In another ten minutes all danger seemed over, and she slept soundly for half an hour. She felt better when she woke, but up to twelve o'clock she continued to have sudden pallors, which did not, however, go so far as syncope. She, however, eventually recovered from the effects of the injection, and also from the gastric affection for which she had sought advice.—*London Med. Record*, Jan. 27, 1875.

14. *Effects of the Alcoholic and Watery Extracts of Ergot.*—Dr. H. KÖHLER describes the results obtained by a series of comparative experiments with the substances to which the name "ergotine" has been incorrectly applied. The ergotine prepared by Wigger is an extract of the constituents of ergot, soluble in alcohol but insoluble in water; whereas that of Bonjean contains the constituents soluble in water but insoluble in alcohol. It is obvious that these substances, although called by the same name, must be very different; and it also appears that neither of them is a distinct chemical compound, such as quinia or morphia, and it is misleading to call them by a name suggestive of that. It seems that Bonjean's ergotine (the watery extract) stimulates the depressor centres in the heart, and the vaso-motor centres in the medulla oblongata, thereby producing slowness of pulse and contraction of the arteries, with consequent increase of the blood-pressure. Large doses paralyze the heart. Wigger's ergotine has no influence on the heart or arteries. It, on the other hand, acts as an acrid poison, irritating mucous membranes, and even producing convulsions. Both ergotines reduce the temperature and retard respiration, but Wigger's more than Bonjean's. (In dogs, Bonjean's even accelerates respiration.) Bonjean's ergotine reduces the irritability of the peripheral motor nerves when it acts directly on them, while Wigger's increases it. Both widen the pupil, and both diminish the irritability of the sensory nerves. From these facts it seems obvious that a discrimination must be made between these two substances in their therapeutic use. When the object is to cause contraction of the bloodvessels, slowness of pulse, reduction of temperature, and reflex action, then Bonjean's is the ergotine to use. Wigger's is useless as a hæmostatic, and when it is wanted to reduce temperature or reflex action it is not so good as the other, on account of its narcotic properties. Wigger's ergotine, on the other hand, increases the irritability of the peripheral motor nerves; hence, to produce labour it may be best to combine the two and give the ergot in substance. An infusion, of course, only gives the constituents soluble in water.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx. Pt. III.

15. *Ether as an Anæsthetic.*—The late British journals show that the profession in that country are at last awakening to the knowledge of the superior safety of ether over chloroform as an anæsthetic. This journal has always

endeavoured to impress upon its readers the great danger, we might say the unjustifiableness, of the use of chloroform, and we are glad to find that the profession in Great Britain, aroused by the frequent reports of cases of fatal poisoning by chloroform, are beginning to realize the danger of chloroform, and that in ether we have an almost absolutely safe anæsthetic.

In the *Lancet* (Jan. 30th), it is stated that "St. George's Hospital has an experience of nearly four years during which ether has been used there as the ordinary and prevailing anæsthetic, and during which it has been amply proved to be speedy, convenient, and effectual for all purposes."

Dr. Thos. Keith, of Edinburgh, the successful ovariologist, states (*British Med. Journal*, Jan. 30th) that he has given ether in ovariectomy and other prolonged operations, or whenever it was necessary in feeble patients to give an anæsthetic, ever since the beginning of 1867, and he adds that his "confidence in sulphuric ether as the best practical anæsthetic we yet have does not diminish. Its low specific gravity must make it less dangerous than the others. It is not perfect, but it answers my purpose better than any other. It saves my patients from the misery of after-vomiting, and, in ovariectomy, from the chance of losing their lives in certain cases of bad adhesion from bleeding being set up by the sickness after the abdomen is closed. Whether of itself it diminishes the risk of operations, I cannot tell; but I am inclined to think that it does often save the feeble ones. This much I can say, that ether has now been given in one hundred and thirty-five cases of ovariectomy, and in two cases of successful removal of the uterus for fibro-cystic tumour. In every case, the anæsthesia was profound, many of the operations were very tedious, and, of the last sixty-six operated on, sixty have recovered."

16. *Copaiba as a Diuretic*.—Mr. F. L. DIXON records (*The Practitioner*, Feb. 1875) three cases of dropsy, in which he administered copaiba as a diuretic with great benefit. "The drug seemed to act by increasing the amount of the urinary water, for the sp. gr. fell as the amount of the urine increased."

17. *Rhamnus Frangula as a Substitute for Castor Oil*.—Dr. J. C. O. WILL recommends (*Med. Times and Gaz.*, Feb. 6, 1875) the fluid extract of *Rhamnus frangula*, black alder, as possessing all the desirable properties of castor oil without its disagreeable ones. The extract he employs contains in each drachm the equivalent of one drachm of the bark. "This extract is a dark brown, thickish fluid, with a rather sweetish and far from disagreeable taste. The dose, of course, varies according to the effect desired, the age, and the condition of the patient; but I have proved from experience that the quantity suggested by the makers of the extract—viz., one to two drachms—is, as a rule, too small for an adult. For a child one drachm is sufficient, but for an adult a dose of from two and a half—that is, an average dessertspoonful—to five drachms is necessary, and I generally order the following: *R. Extracti rhamni frangulæ liquidi* ℥v, *aquam ad* ℥j. *M. Sig.*: the half to be taken in a wineglassful of cold water, and should the bowels not move in four hours the remainder to be given; or the first dose at night, and the second in the morning, should no motion have taken place. The effects are much akin to those of castor oil, but there is no nausea, there are no eructations, and there is no griping. With regard to the last symptom, though it is, as I have already stated, but slight in the case of castor oil, it is hardly ever present here in even the least degree, only one patient of the many to whom I have given it complaining of it at all, and in her case the bowels had not been opened for four days, and she had only a very little uneasiness. The stools are not generally loose, and never watery; it usually acts only once, but in two of my cases three motions followed five drachms. It seems to have, in addition, as first stated by Mr. Giles, tonic and aromatic qualities, by which the muscular action of the bowels is slightly stimulated; and it is probably to this that its usefulness in habitual constipation is to be attributed. I have now prescribed it in many different forms of disease, and in all it has answered well. I think that it will prove particularly useful in children; in those suffering from hemorrhoids, or

other affections of the rectum; after surgical operations about the pelvis or abdomen; in inflammatory or spasmodic diseases of the genito-urinary organs; in pregnant and puerperal females; or, to quote the words of Christison when speaking of *oleum ricini*, 'in all circumstances where it is desirable to move the bowels gently without occasioning local irritation or general disturbance.'"

18. *Antagonism of Medicines.*—In our preceding number we gave the results of the experiments made by a committee of the British Medical Association, on the antagonism of certain medicines, and the following are the results of these investigations in regard to the other articles experimented with:—

VI. *As to the Antagonism between Tea, Coffee, Theine, Caffeine, Guanine, on the one hand, and Meconate of Morphia on the other.*

In this investigation, one hundred and seventeen experiments were performed.

1. Theine is antagonistic to meconate of morphia, inasmuch as the action of the one substance modifies that of the other, and may even save life from a fatal dose of either substance.

2. Meconate of morphia delayed the appearance of the convulsions characteristic of the action of theine; but, on the other hand, theine, if given in large doses, did not affect in a marked degree the action of meconate of morphia, because symptoms of poisoning by theine were soon manifested.

3. Further experiments on cats showed that, (a) while a cat may recover from the effects of a dose of $1\frac{3}{4}$ grains of meconate of morphia given alone, it will not recover from the effects of a dose of 2 grains, even although the effects of the latter dose are modified by those following the introduction of 4 or 5 grains of theine; (b) that in three cases the animals recovered from the effects of $1\frac{7}{8}$ grains of meconate of morphia and 4 to 5 grains of theine, while they died when the same dose of meconate of morphia was administered eight days afterwards; (c) that, when the dose of theine was increased beyond five grains, the animals invariably died, apparently from the effects of theine.

4. Experiments on rabbits, as to the antagonism between meconate of morphia and theine, were found to be unsatisfactory as regards the purposes of this inquiry, because both drugs produce epileptiform convulsions in these animals.

5. The results obtained in investigating the action of caffeine and guanine as antagonists to meconate of morphia were similar to those observed with reference to theine.

6. Experiments were made on dogs to ascertain the effects of strong infusions of tea and decoctions of coffee as antagonists to meconate of morphia. These were unsatisfactory, chiefly because the tea or coffee was usually vomited so soon as to prevent the possibility of the exercise of any physiological antagonism. At the same time, it was observed in several instances that the administration of tea or coffee so excited the animals as to prevent them from falling into stupor or coma after a dose of meconate of morphia, which would have produced this effect had the tea or coffee not been given.

VII. *Antagonism between Extract of Calabar Bean and Strychnia.*

In this investigation, thirty experiments were performed.

Although the symptoms produced by either substance were modified considerably by the action of the other, there was no instance of recovery from a fatal dose.

VIII. *As to the Antagonism between Bromal Hydrate and Atropia.*

In this investigation, thirty-six experiments were performed.

1. There is a distinct physiological antagonism between bromal hydrate and atropia.

2. After a fatal dose of bromal hydrate, the introduction of atropia arrests excessive secretion from the salivary glands and mucous surfaces of the lungs, and thus obviates the tendency to death from asphyxia caused by the accumulation of fluids in the air-passages. Atropia also causes contraction of the

bloodvessels, and thus antagonizes the action of bromal hydrate, which causes dilatation of these vessels by paralysis of the sympathetic nerve.

3. While atropia may save life after a fatal dose of bromal hydrate, the converse apparently does not hold good, as we have never succeeded in saving life after a fatal dose of atropia by the subsequent injection of bromal hydrate.—*British Med. Journ.*, Jan. 23, 1875.

19. *Chemistry of Therapeutics*.—The number of the *British Med. Journal*, for Jan. 30th, contains an interesting article by Dr. JOHN MCKENDRICK, "on the influences which a knowledge of the facts and laws of chemical science have, or ought to have, upon the practice of therapeutics." The conclusion at which he arrives is "that we know little regarding the chemical processes occurring in the living body, either in health or in disease, which can be of much service in the practice of therapeutics. But we know that chemical processes do occur which are closely connected with the manifestation of vital phenomena. If such chemical changes do occur, we may reasonably expect to be able to influence them by the introduction of chemically active substances. This opens up another line of inquiry; namely, how far can we produce changes in physiological action by changing the chemical composition of the substance introduced into the body? The answer to this question is not only likely to be of practical service to therapeutics, but it may reflect light on the true character of those chemical changes occurring in the living tissues, the investigation of which is so difficult."

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

20. *Treatment of Typhoid Fever by Cold*.—Dr. F. T. ROBERTS, Assistant Physician and Teacher of Clinical Medicine in University College Hospital, gives (*Practitioner*, January, 1875) the following as the conclusions which he has arrived at with respect to the treatment of typhoid fever by cold.

"1. It is highly desirable that the members of our profession should be more generally impressed than they are at present with the usefulness of the various modes of applying cold to the surface of the body in febrile cases, under certain circumstances; and that they should be prepared without hesitation to carry one or other of them out efficiently whenever this plan of treatment is indicated. This applies to typhoid in common with other fevers.

"2. On the other hand, to adopt a routine hydropathic treatment of any fever seems to me most objectionable, and this applies especially to the more severe methods which are advocated. As already remarked, they are not easily carried out in general practice; they are certainly not required in a large proportion of cases; most of them are anything but pleasant to the patients, and they may prove very trying and exhausting, especially if frequently repeated, as they usually need to be if the treatment is efficiently fulfilled; while it must be remembered that they are not harmless measures, but may have a powerful influence for evil as well as for good. With regard to typhoid, many cases do not come under observation until it is too late to attempt to check the primary fever, even supposing that the intestinal lesion could be thus limited. For these and other reasons I do not see that, at present at least, a hydropathic treatment of typhoid fever in general practice has any claim to our support. If it is thought worthy of trial it ought first to be fairly tested in *bonâ fide* cases of this disease, and under the strictest and most competent supervision. With regard to sponging of the skin, I believe that this is often very useful, and ought to be employed far more frequently than it is at present, in typhoid as well as in other fevers. With proper care it does no harm, while it often gives much relief, and is beneficial in other respects.

"3. The cases in which the more severe methods of applying cold are indi-

cated are those in which the temperature is already very high and remains so, or shows a tendency to rise rapidly, especially if at the same time there are signs of much nervous disturbance. Unquestionably this plan of treatment is not resorted to under these circumstances nearly so frequently as it ought to be. It is difficult to lay down any exact rule as to what temperature indicates the necessity for adopting it, but if it reaches to 106° F. and shows no tendency to fall, or, still more, if it continues to rise, this treatment deserves due consideration. Necessarily much will depend on the actual condition of the patient, and every case must be thoroughly considered in all its features. The best method seems to me decidedly that of placing the patient in a tepid bath, and gradually cooling this. Affusion over the head is useful if there are marked nervous symptoms. Of course it is imperative that this treatment should be always conducted under the strictest supervision, and its effects carefully watched."

21. *Treatment of the Diarrhœa of Typhoid Fever.*—Dr. GEORGE JOHNSON makes (*Practitioner*, January, 1875) some very sensible remarks on this subject. He says that he has gradually arrived at the conclusion that "in the treatment of typhoid fever careful nursing and feeding are of primary importance, while, as a rule, no medicines of any kind are required, and when not required they are often worse than useless. The result of this change of treatment has been that diarrhœa is a less frequent symptom than formerly, and when it does occur it is far more tractable, while tympanitic distension of the abdomen is a rare event. The mischievous opiate enemata and the torturing turpentine stupes have disappeared together. I believe that one of the main reasons why we have less diarrhœa than formerly is, that we carefully abstain from the employment of irritating drugs of all kinds. As a rule, a fever patient has the 'yellow mixture,' which is simply coloured water; and except an occasional dose of chloral to procure sleep, and a tonic during convalescence, we give no active medicines of any kind. We feed these patients mainly with milk, with the addition of beef-tea and two raw eggs in the twenty-four hours, and we give wine or brandy in quantities varying according to the urgency of the symptoms of exhaustion, especially in the advanced stages of the disease; but in many of the milder cases, and especially in the case of children, we find that no alcoholic stimulants are required from the beginning to the end of the fever, and when not required they are of course best withheld. I have said that we give no irritating drugs of any kind. For a time I adopted the practice which has been strongly recommended, of giving repeated doses of diluted mineral acids. I have long since abandoned this practice, for I am sure that it was injurious, and it was injurious in a very obvious and intelligible way: it irritated the ulcerated mucous membrane of the intestines, it caused pain and griping, and I believe that it often increased the diarrhœa. I have no doubt that the comparative infrequency of the severe and obstinate diarrhœa amongst my enteric fever patients during the last few years is partly attributable to the discontinuance of this mineral-acid treatment. The extreme sensitiveness of the intestinal mucous membrane during the progress of typhoid fever is obvious and indisputable. It is admitted on all hands that the greatest care is required in returning to solid food during convalescence; a want of caution in this respect has often been followed by a return of pain and diarrhœa, an increase of temperature, and not seldom by a decided relapse. If, then, a slice of bread or a morsel of fish can excite such local and general disturbance even after the subsidence of the fever, how improbable is it that repeated doses of an irritating mineral acid can be given without injury during the height of the fever, when the ulceration of the intestines is actively progressing!

"One more hint I wish to give you with regard to the diarrhœa of typhoid fever, which is that in all probability it is often increased by the patient's inability to digest the beef-tea and eggs which are sometimes too abundantly given. When you have reason to suspect that this may be the case I advise you for a few days to keep the patient entirely upon milk, which contains all the elements required for the nutrition of the tissues in a form most easy of digestion. I have had a large experience of the effects of an exclusively milk diet in various forms of disease. In many cases of Bright's disease it is very

efficacious, but one of the inconveniences in some of these cases is its tendency to cause troublesome constipation. In many cases of chronic diarrhœa and dysentery, milk diet will effect a cure without the aid of medicines of any kind. There is now in Twining ward a girl, aged fourteen, who for four months had been suffering from dysenteric diarrhœa, the stools containing much blood and mucus. She was put upon a diet of milk alone, without medicine; within a fortnight the diarrhœa entirely ceased, and she is now convalescent. For the reason, then, that milk has this antilaxative and even constipating effect in various morbid states, it is, when given alone, one of the best antidotes for the diarrhœa of typhoid fever.

"That our treatment of fever cases is not unsuccessful is shown by the results. I find on reference to my case-books, that during the past year, from Nov. 1, 1873, to Oct. 31, 1874, I have had under my care in the hospital twenty-nine cases of fever; fifteen typhoid, and fourteen typhus. Some of the cases have been very severe, but all have been discharged well; not one death has occurred. This very satisfactory result I attribute mainly to the admirable nursing which our patients receive, and to our abstinence from mischievous medication. To only one of these patients was opium given, and that was for the relief of an irritable condition of bowel which remained after a very severe attack of typhoid. A few doses of opium soon put a stop to this, and the patient made a good recovery."

22. *Treatment of Acute Rheumatism*.—Dr. THOS. S. DOWSE, in a paper read before the Medical Section of British Medical Association (*Brit. Med. Journ.*, Jan. 9, 1875), stated, that it seems to him "that, in the treatment of rheumatic fever, we have, first, to consider the best way to eliminate the acid products of the diseased state; secondly, to relieve pain. Beyond this, the case can be treated as an ordinary one of functional glandular derangement, or febricula; for, when once the sour secretion from the skin is eliminated (no matter how acid the urine might be), the pain subdued, and the temperature influenced, we need have no fear of heart-complication arising. Then comes the question, What are the best means, if there be any, to bring about this condition?"

"During the past three years, I have been in the habit of packing most of my cases in a wet blanket, and afterwards rolling them up in dry blankets, so as not only to promote profuse sweating, but also to increase the temperature. This mode of procedure, which I conducted in a very indefinite manner, gave such good results, that I thought carefully over the *rationale* of the system, and at once adopted a course of wet packing after the manner and with the success which I will relate to you. The procedure is simple. The bed is covered with India-rubber sheeting; over this is laid a blanket which has been wrung out of hot water. The patient is then enveloped in the blanket, and covered with six folds of dry blanketing. By this, the temperature is raised and profuse sweating results: the former, if need be, is assisted by the administration of brandy in half-ounce or ounce doses every hour, and the latter by giving freely warm milk and water. If the temperature exceed 102° , then the stimulant is unnecessary. My plan is to continue the treatment for three successive days; namely, for six hours the first day, four the second, and two the third. After the first pack the patient is free, or nearly so, from pain; after the second pack the pain has completely subsided, and after the third pack the sour smell usually disappears. In addition to the relief from pain and subsidence of acid secretions, the pyrexial state, with its attendant symptoms, will be found to decrease in direct ratio, and likewise the pulse. The secretion of urine will become more plentiful, and the urea will diminish in quantity; yet, although the improvement is so marked in reference to pain, sweat, pulse, and temperature, the urine remains acid, and loaded with lithates, and the tongue coated, for some days longer. It not unfrequently happens, especially in young people, when the weather is variable, that transitory pains return in one or more joints; but in almost every instance the pain has been subdued, if not by the first, by the second bath. In reference to cardiac inflammation, I believe that this treatment subdues it more rapidly than any other, rendering the valves less likely to undergo organic change.

"But now comes a very important practical question. There can be no doubt that the packing process produces considerable constitutional disturbance. Under what circumstances should this treatment be adopted, and under what conditions is it not practicable? Every one who has had much to do with this disease must be conscious of the anxiety which it gives him when the temperature exceeds 105° or 106° , and especially when it is associated with the least sign of cerebral disturbance; and, as my treatment consists in elevating the temperature, it will be apparent that some care is necessary. Thus, according to my experience, it should not be adopted—1. If the patient suffer from incompetency of the aortic valves; 2. If there be much fluid in the pericardium from previous inflammation; 3. If the temperature be over 104° ; 4. If the skin be hot, dry, and harsh, without the least tendency to sweating; 5. If there be extreme nervous prostration from habits of drunkenness or other vitiating cause; 6. If the patient be pregnant.

"Again: during the time the patient is packed, the following points must be observed: 1. If, after two or three hours, the patient become very restless, with a dry non-perspirable skin, I should advise the treatment to be discontinued; also when the temperature exceeds 105° ; 2. If the temperature do not rise, and the patient be sweating freely, give half an ounce, or even an ounce, of brandy every hour in warm milk and water. Thus we have to secure profuse sweating and a mean temperature of 104° ; we have to guard against a dry skin and a temperature over 105° .

"Let us consider this a little more practically. If a healthy child be packed for six hours as directed, whose normal temperature is 99° , we find that it will only rise one degree during the whole course of the six hours, and the administration of a stimulant will not cause it to rise any more. It is very different during the pyrexial stage of acute rheumatism, and I have proved most unquestionably that, when the packing alone does not increase the temperature, this is easily brought about by giving brandy in the manner just stated. I have adopted this treatment with excellent results in cases where there has been, in addition to the rheumatic inflammation, a mitral murmur, pericarditis, and pleuropneumonia. In some cases I give medicine; in others I do not. My rule is this: not to give medicine or solid food until after the third packing, and this means not until the acute symptoms have subsided and the temperature is down to 100° ; then some vegetable tonic, with solution of acetate of ammonia, is to be preferred to large doses of alkali or quinine. If, however, the case have been of long duration before coming under treatment, and if it be the third or fourth attack, with probably cardiac disease, then of course the orthodox measures must be resorted to for such complications. If the temperature should run very high, with tendency to delirium, I believe the best plan is in every instance, whether under the packing treatment or otherwise, to apply ice to the head, expose the body freely to a current of cold air, and sponge it over lightly with a mixture of one part of spirit to two of water, until the temperature falls; then to discontinue this, and to apply a sinapism to the epigastrium. The following case occurred in my practice, from which a lesson might, perhaps, be learned. A young robust woman, aged 19, came under my care with incipient acute rheumatism, but with a dry harsh skin and a temperature of 102° . I had her packed in the usual manner at 1.30 P. M.; at 4.30 P. M., there was no action of the skin; temperature 104° ; at 6.30 P. M., still no action of the skin; temperature 106.2° ; rapid action of the heart and tendency to delirium. I at once applied ice to the head; bathed the exposed body with spirit and water, and in twenty minutes I was pleased to find the temperature down to 103° ; the following morning it was 101° ."

23. *Cold Baths in Cerebral Rheumatism.*—M. RAYNAUD reports the case of a very strong, vigorous, and sober man, aged 32, who was attacked by rheumatism affecting many of the joints. Two days afterwards the pains left him entirely, but very serious cerebral symptoms came on; and in two days, when M. Raynaud saw the patient, the pulse was 120 and the rectal temperature 104.9 Fahr. M. Raynaud bled him to more than two pounds, but the temperature and pulse still remained high. M. Raynaud, therefore, ordered cold baths.

One a little above 60 deg. Fahr., was ordered to be given, at 11.28 A. M., to last half an hour. When the patient left the bath, his temperature had fallen to 100 deg. Fahr., his pulse to 76, and consciousness, which had been lost, seemed returning. At 3.30 P. M., the temperature rose to 101.66 Fahr. Another half hour's bath was ordered, during which the exhaustion was considerable. After the bath, the rectal temperature was 97.5 Fahr. At 8.30 P. M., the temperature reached 100.4 deg. Fahr. Another bath was given, after which the rectal temperature was 98.8 deg. At 11 P. M., consciousness returned, and the patient passed the night in quiet sleep. On the succeeding day, three cold baths were given, and were followed by a similar lowering of the temperature. At the end of this day's treatment, the patient had regained his consciousness; asked for drink, and slept quietly. On the third day, he had two baths, and a final bath on the fourth day. From that time, the temperature never exceeded 99.14 deg. Fahr., even in the evening, and convalescence set in decidedly. The cerebral symptoms in this case must be attributed to that meningitic form of cerebral rheumatism characterized by the advent of delirium and coma. But the appearance of the meningitic form, in the author's opinion, is purely symptomatic; for it cannot be supposed that an attack of meningitis could be instantly influenced by a cold bath.—*British Med. Journ.*, from *Journal de Thérapeutique*, No. 22, 1874.

24. *Herpes Zoster successfully treated with Zinc Phosphide.*—Dr. J. ASHBURTON THOMPSON relates (*Glasgow Med. Journ.*, Oct. 1874) an interesting case of this. He observes that the decomposition of the phosphide of zinc within the body "affords the effects of free phosphorus; in my opinion, ten parts of zinc phosphide are equivalent in therapeutic effect to one part of the uncombined element. The other phosphides and hypophosphites are not ascertained to afford the effects of free phosphorus. This compound, which, given in a dose of one-third of a grain repeated every two or three hours, is, generally speaking, sufficient to remedy such an attack of neuralgia as accompanied the rash in this case, and was therefore employed in it, is not that which appears to me best adapted for the treatment of other forms of skin disease. Many of these attend upon states in which advantage may be gained from the use of cod-liver oil; and, at the same time, that a solution of solid phosphorus in oil is that form which best insures the absorption of the drug in its free and most active state, this fish oil is that one which alone does not expose the element to changes which are either destructive of its remedial powers, or render it dangerous to the patient. These, therefore, are two reasons for employing in such cases a solution of the drug in cod-oil; a third may be found in the fact that such a solution possesses neither the smell nor the taste of the element. Still, patients are found who will not or cannot take the solvent; under these circumstances, no more elegant or effective means of exhibiting phosphorus exists than a concentrated form of the same solution inclosed in little gelatine envelopes forming what are known as '*perles*.'¹ These, it need scarcely be said, are quite tasteless; and if taken immediately after meals, cause little or no phosphoric eructation.

"The dose of phosphorus which may be given with advantage will vary strictly with the object in view. In the example before us, acting on my knowledge of the treatment most desirable in acute neuralgia, it was attempted at once to induce the stimulant action of the drug, by giving full doses of the zinc-phosphide; and this result being obtained, the disease was cured. So, in the eruptive fevers, it is the stimulant effect of the drug which it is desired to produce, and it must be attempted in the same manner—by exhibiting full doses from the beginning of treatment. As a rule, for this purpose I should be inclined to prefer phosphorus in an alcoholic or ethereal solution, given in a dose equal to one twelfth of a grain, and repeated every four hours. But where the object in view is to give tone to the cutaneous vessels, or to improve

¹ Such capsules have been prepared for me by Messrs. Young & Postans, London, containing various doses of the element. I have found them eminently satisfactory.

the general nutrition of the body, a much smaller dose of the element should be employed, and its administration must be continued for long periods. In these cases, if the patient can be persuaded to swallow a large dose of cod-liver oil, he may be allowed to take the thirtieth part of a grain of phosphorus, dissolved in from two to four drachms of it thrice daily. If, however, this amount of the solvent be objected to, or be deemed unnecessary, the 'perles' may be employed. These can be obtained containing the dose named in about four and a half minims of oil; but, if these preparations be employed, I prefer to administer the same dose in a larger number of capsules (containing a more dilute solution), since, by this means, much unpleasant eructation may be avoided, to which the more concentrated solution does give rise, notwithstanding every precaution.

"In this way free phosphorus may be administered for long periods with perfect safety, provided the quantity employed does not exceed one-fourth of a grain *per diem*—an amount which, probably, it will seldom be necessary to employ in the treatment of skin diseases. Nor, except under special circumstances, will it be found necessary to seek any other method of exhibition.

"Thus, although it is possible that with further knowledge of the effects and mode of action of phosphorus in cutaneous disorders, some other more advantageous mode of employing it may be devised, for the present, at all events, I consider that this one fulfils all the necessary conditions of safety and physiological activity. It is in these matters that the pharmaceutical preparation of phosphorus has, until quite recently, failed; and since any imperfection in the preparation employed leads on the one hand to the serious risk of the patient, or, on the other, to disappointment in the result of treatment, probably a knowledge of this method of exhibition will lead to a further and more systematic inquiry into the value of phosphorus as a remedy in chronic skin disorders. The result of treatment with the remedies at present at command is scarcely so satisfactory as to render such an investigation superfluous, while the result of observations hitherto made has, so far as they are reported, been remarkably successful. From a consideration of these notes, and some knowledge of the physiological action of the drug, I scarcely doubt that phosphorus will acquire a just reputation in the treatment of chronic skin diseases not inferior to that at present enjoyed by arsenic."

25. *Subcutaneous Injection of Strychnia in Diphtheritic Paralysis.*—In the *Deutsches Archiv für Klinische Medicin* for 1874, Dr. ACKER relates some cases of diphtheritic paralysis. In one of them, the patient, a man aged 38, had complete paralysis of both the external and internal branches of the superior laryngeal nerve. Not only was there complete loss of sensation in the upper cavity of the larynx and paralysis of the external branch supplying the crico-thyroid muscles, but also of the fibres of the internal branch which supply the thyro- and the aryteno-epiglottic and arytenoideus transversus muscles. The author believes that this peculiar affection of the superior laryngeal nerve is to be explained by the course which it takes along the middle constrictor of the pharynx, whereby the morbid process affected it by local influence, just as it produces paralysis of the nerves of the palate and œsophagus. In the case referred to, there was disturbance of co-ordination of the muscles in walking, and the paralysis of sensation and motion was most marked on the right side. The patient had also impairment of the sense of touch. The application of galvanism along the spine, along with hypodermic injection of strychnia, produced so much improvement, that Dr. Acker was led to specially examine the action of strychnia in such cases. It was used in the form of a solution containing 2 per cent.; and within four weeks 0.4 gramme (three-fifths of a grain) was injected into a man. Of the beneficial action of this treatment, Dr. Acker specially convinced himself in the case of a woman, aged 36, with complete paraplegia.—*Brit. Med. Journ.*, Jan. 30, from *Centralblatt*, No. 57, 1874.

26. *Observations on Erysipelas.*—The following observations by Dr. W. LUKOMSKY on erysipelas are of great interest and importance, and as they were made under the eye of Recklinghausen, at Strasburg, we can have great con-

fidence in their accuracy. They are divided into two sets, in the first of which the results of the observation in nine cases of erysipelas are given, and in the second a number of experiments on animals, and the conclusions deduced, are recorded. His general conclusion is, that there is a connection between erysipelas and the low organisms which the author calls micrococci. Their quantity and the rapidity of the spread of the disease were in direct ratio. The micrococci are minute globular bodies occurring in immense numbers, and distinguished from bacteria by the latter being rod-shaped. In his nine cases in the human subject he finds, that, wherever the erysipelas is recent and progressing, the micrococci are in abundance in the lymphatic vessels and serous canals (Lymphcanalicula—Saftkanälchen). When the process was retrograding or stationary, there were no micrococci, although the inflammation might be more intense. His experiments on animals were made partly by injecting fluid from erysipelatous parts under the skin of closely shaven rabbits, and partly by applying such fluids to open wounds. In the former case a rapidly extending phlegmonous inflammation of the subcutaneous areolar tissue was produced, and in the part affected the micrococci increased very rapidly, and developed in enormous numbers in the serous canals and lymphatic vessels. In the second set of experiments a violent inflammation of the neighbourhood of the wound was produced, which extended rapidly to the skin, where it could not be distinguished from erysipelas. In these cases, too, micrococci were found in abundance, chiefly at the periphery of the inflamed area, and where the inflammation was advancing, the micrococci passed from the wound into the serous canals, and thence into the lymphatic vessels. It is not easy to say how they are carried in, but that they are so there seems to be no doubt. It is also difficult to see how they disappear, but it is noted that even before the inflammation has disappeared they have gone, and they are to be found almost alone in the parts where the disease is actually advancing. It is also noted that these experiments prove the connection between the serous canals and lymphatic vessels, which was asserted by Recklinghausen, but has since been denied by some. Among the author's nine cases there is one in which the erysipelas occurred without any external wound, but in this case the micrococci were found just as in the others. The observations are illustrated by some excellent sketches.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx.

27. *Putrid Poisons, Septicæmia, etc.*—Dr. P. L. PAXUM, of Copenhagen, discusses the question whether the symptoms which undoubtedly result from the introduction of putrid substances into the body, are due to the existence in these substances of certain active organisms (chiefly the *Bacterium termo* of Cohn), or to some poison, possibly related in its production to these organisms. He comes to the conclusion that in decomposing substances there is a definite chemical poison which, in its composition, is more related to the vegetable alkaloids than to albuminous substances. This substance probably consists of several poisonous matters, it is not destroyed by boiling, is soluble in water, but precipitated by strong alcohol. The poison is probably produced by the vital processes of the bacterium, and may be either a secretion of this organism, or a product of the decomposition of albumen. He comes to these conclusions on what appear to be sufficient grounds. If a putrid solution be boiled for eleven hours, or filtered several times till it is perfectly clear and free from bacteria, it still produces the symptoms of putrid poisoning. Or, if the fluid be evaporated to dryness, and the residue extracted, first with alcohol and then with water, the alcoholic extract does not produce the symptoms, while the watery does. The bacteria which produce this poison exist in the mouth and intestine of man, and very probably pass occasionally into the blood and tissues, but in these they seem incapable of living, till a certain time after the death of their host. In the intestine they probably produce the putrid poison, but the mucous membrane seems incapable of absorbing it, this being parallel to the fact that curare is not absorbed by the intestines. On the other hand, the putrid poison is often absorbed from the surface of wounds, and the characteristic symptoms are produced (septicæmia). It seems that this putrid

infection is not inoculable. It should, however, be noted that there is, according to some, a disease which depends on the existence in the blood of a distinct organism, an organism different from the bacterium termo, and which has been named by Klebs the *Mikrosporon septicum*. This organism seems, under certain special circumstances, when its germs exist in the air (specially in crowded hospitals), or when it is carried from one patient to another, to be able to exist in the blood and tissues, and increase there. It produces serious inflammations and suppurations in the parts to which it is carried; in fact, it is the active agent in the production of pyæmia. In many cases there will be the combination of the putrid poison with this active organism, and in these cases the symptoms will be partly pyæmic and partly septic in character. The author at the end of his paper suggests that greater care should be exercised in using terms in describing the conditions treated of. Septicæmia, if used at all, should be confined to the symptoms produced by the putrid poison. It seems that from this putrid poison, which is a composite substance, it is possible to separate a definite substance, "sepsin," and its introduction into a living animal produces symptoms. But this should not be called septicæmia, but rather sepsin-poisoning, and it would even be better to speak of putrid-poisoning when referring to the whole poison, than of septicæmia, a word which is somewhat indefinitely used.—*Glasgow Med. Journ.*, Oct. 1874, from *Ibid.*

28. *Investigations on Lupus*, by Dr. C. FRIEDLANDER.—The observations in this paper are of great interest to the histologist, and also indirectly to others. The subject of investigation is the exact nature of the growth which occurs in the skin in lupus. We all know that lupus presents itself primarily in the form of small nodules, and that while these nodules ulcerate or cicatrize, the disease spreads by the formation of fresh crops of nodules at the periphery. The important matter, of course, is the nature of these nodules of which the affection primarily consists. Virchow and his followers consider them to be of the structure of granulation tissue, and that author classes lupus among his granulation-tissue growths. Rindfleisch has described the nodules as if they were related to the sebaceous glands, and considers that the disease is one primarily of these glands. His views, however, have not been confirmed, and the present observations are opposed to them. The author so far agrees with Virchow that he finds in lupus a very great infiltration of the true skin with round cells like those of granulations. But in the midst of these infiltrations he finds structures which seem to have hitherto escaped observation, but to which great importance is attached. These are numerous very small globular growths composed of cells larger than those of granulation tissue. In the centre of these minute nodules there are always one or more giant cells. Similar structures are found in neighbouring lymphatic glands, which to the naked eye present the usual appearances of scrofulous glands. Now, the author agrees with the views recently enunciated by Schüppel as to the structure of tubercular growths, and the nature of the scrofulous affection of the lymphatic glands (see this *Journal* for 1873, p. 413), and he identifies these little growths in the midst of the infiltrated skin in lupus, and in the neighbouring lymphatic glands as tubercular nodules. He, therefore, looks on lupus as a local tuberculosis, and compares it with the same disease in the brain, joints, testis, kidney, etc. These minute globular bodies fulfil the three criteria of tubercles—1, they are in the form of numerous globular nodules; 2, they have the structure of tubercular nodules, including non-vascularity; 3, they present a similar tendency to degenerate.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

29. *Aneurism of the Innominate Artery treated by Ligature of the Common Carotid and Subclavian Arteries simultaneously*.—Mr. FREDERICK ENSOR, Surgeon to Port Elizabeth Hospital, South Africa, reports (*Lancet*,

Feb. 6, 1875) the case of a Hottentot on whom he operated on the 8th of Sept. last, for what he supposed to be a dilated arch of the aorta, with a second dilatation in the arteria innominata, by placing a ligature on the common carotid artery just below the omohyoid muscle, and on the subclavian as it crosses the first rib. "Taking the cricoid cartilage as a centre, I made an incision as nearly as possible an inch and a half on each side of it, on the border of the sterno-mastoid muscles. The anterior jugular, prominent and full, had to be carefully avoided, and also a network of veins which presented themselves low down in the wound. Anxiety to prevent the obscuring of parts by venous blood caused me to be longer than I anticipated in opening the sheath over the artery just at the lower edge of the omohyoid muscles. The artery being cleared by the director, I had no difficulty in passing the needle carrying a silk ligature under it. The cutting off of so large a supply of blood from the brain had no perceptible effect on the patient. Without allowing him to emerge from the effect of the chloroform, which he took kindly, there being no embarrassment of heart or lungs, I pulled his right arm well down over the side, and fastened it by the wrist to the leg of the table. This effectually kept the shoulder down without an assistant being in the way. Making the usual incision from the anterior border of the trapezius to the edge of the sterno-mastoid muscle, I cut a small artery, which was the only one which was severed in either operation; its jet stopped without a ligature; the little venous hemorrhage, which temporarily obscured the outer edge of the wound, was quickly sponged up, and ceased to trouble. The external jugular, large and goitred by transverse veins joining it, came into view as the retracted skin sprang into its place above the clavicle. The deep fascia was freely opened on a director, the vein held to the inner side by retractor. The finger, passed into the wound, came at once against the border of the scalenus anticus and its insertion into the tubercle of the first rib, and the subclavian artery felt distinctly throbbing under the finger. Freeing its communication with the brachial nerve and loose tissue all around, the needle, armed as before, was without any difficulty passed under the vessel, the silk tied, shutting up the radial pulse. Both wounds were next closed with wire suture, and dressed with carbolic acid lotion and oiled silk.

"The ligature of the subclavian was accomplished in a few minutes, and seemed to me a much easier affair than that of the carotid. In the present instance the carotid lay deep, on account of the shortness of the man's neck and the bulk of the sterno-mastoid muscle. The engorged venous network was also a cause of more than ordinary care and consequent time spent in manipulation.

"Before removal to his bed the man spoke intelligently, and his pulse was 82. In the evening, feeling restless, he was ordered thirty minims of solution of morphia."

Under date of Oct. 20th Mr. Enson states that the operation may be considered to have done good. The patient has not so much pain as he had at the end of August. He makes no complaint of pain in the chest; his respiration is quiet; he can swallow semi-fluid food without pain or difficulty. The upper border of sternum and right sterno-clavicular articulation is not more prominent. The bruit is softer; the impulse is less. On the other hand, the tumour is rising in the neck, and he has some symptoms of pressure on the œsophagus and larynx. In the conduct of the case it is worthy of note how the aconite commanded the heart's impulse. The man sleeps well, enjoys his food, is in no particular distress, and is able to go about gently, but cannot make any exertion without embarrassment of the breathing.

The ultimate result of the case Mr. Enson promises to publish so soon as it becomes known.

30. *Treatment of Varix by Injection of Chloral*.—Dr. PARONA describes ten cases of varix of the leg, treated in the hospital at Novara, by the injection of hydrate of chloral. He draws the following conclusions from his cases and from those which have been elsewhere published. 1. The treatment of varix by hydrate of chloral has, up to the present time, been sufficiently harmless. 2. In

the majority of cases, the result of the operation is permanent and complete closure of the varicose veins, with an insignificant amount of reaction. 3. If a coagulum be not formed, the operation may be repeated in a few days without inconvenience. 4. The operation is very rarely followed by phlebitis, supuration, ulceration, or the escape of coagula. 5. Sloughing of the skin on the point of puncture occurs rarely, and is not severe; it depends on want of skill or of care on the part of the operator. 6. The operation is rather painful, and the ulcers generally cicatrize rapidly after the veins have become obliterated. *Lond. Med. Record*, Jan. 20, 1875, from *Gazetta Medica Italiana-Lombardia*, Dec. 12, 1874.

31. *Operation for the Destruction of Varicose Veins.*—MR. CHAS. STEELE, Surgeon to the Bristol Royal Infirmary, describes (*British Med. Journ.*, Jan. 30, 1875) the following method he employs for this purpose. In an ordinary case his plan is "to isolate the main vein or veins below the knee, compress above to define the vessel, make an incision at right angles to its axis, dissect out the vein without picking it, seize firmly with torsion-forceps, and drag out as much as possible, which seldom amounts to an inch, and cut off the piece as close to the skin as possible at both ends. I pass a probe through the removed piece, to be sure that the entire calibre is secured. The vein in the leg is emptied of blood by pressure; if it do not refill, I am satisfied; if it do, I remove portions which are prominent below. A horsehair suture in the wound, a compress of cotton-wool and firm bandage complete the operation. After trying several dressings, I prefer the simple cotton-wool, as it soaks up blood and forms a good protection, which drops off like a scab, if healing by the first intention occur, and comes off easily, from becoming moist, if supuration take place."

He reports several cases successfully operated on by this method.

32. *Laparotomy as a Remedy in cases of Intussusception.*—MR. HUTCHINSON exhibited, at a late meeting of the Pathological Society of London (*Lancet*, Dec. 19, 1874), a specimen of intussusception from a dog. The dog had only slight symptoms for eight days before death; there were no motions, and no blood passed; vomiting occurred once. Intense jaundice occurred two days before death. The small intestine and cæcum had passed into the colon for about eight inches, nearly reaching the anus. There was no peritonitis, and the intussusception was easily reducible. The question was whether operation would have been desirable in such a case.—DR. HILTON FAGGE related two extremely interesting and important cases of operation in which the intestine was replaced during life. The first was that of a woman who had been seized ten days before seen with severe pain in the abdomen, which continued, and was followed in a few days by the occurrence of a tumour in the right iliac fossa. When seen by Dr. Fagge, two days later, there was an ill-defined swelling in the left iliac fossa, on manipulation of which severe pain occurred, and it became more distinct. There was no constipation, and only slight sickness. The diagnosis of intussusception having been made, inflation was tried, which had the effect of removing the tumour from the iliac fossa to the umbilicus. A second trial of inflation not having any good effect, it was decided to operate, and the abdomen was opened under chloroform, and the ileum, which was invaginated, withdrawn from the cæcum. No bad symptom ensued, and the recovery was rapid. The second was one brought into Guy's Hospital in a state of collapse with symptoms of sudden internal strangulation. An exploratory operation discovered a small intussusception, which was reduced, but the patient died of the collapse in two or three hours after the operation.—DR. HARE mentioned a case of intussusception, in which there was a good deal of hemorrhage, and after death the peritoneal surfaces were so firmly united by adhesion that reduction was impossible. He thought there were two distinct classes of cases, and in a case such as his any attempt at reduction during life would fail. Dr. GOODHART related a similar case.—DR. LEARED mentioned a case in which reduction after death was easy.—DR. DOUGLAS POWELL pointed out that it is not easy to produce peritonitis in the dog, hence

Mr. Hutchinson's case had less value in its bearing on the question of operation in man.—Mr. HUTCHINSON, in reply, agreed that this was the case.

33. *Amputation through Joints without interfering with the Proximal Bone.*—Dr. GEO. H. B. MACLEOD, Regius Prof. Surg. Univ. of Glasgow, advocates (*Glasgow Med. Journ.*, Oct. 1874) a modification of the usual practice in amputation through joints, which consists in leaving, in every case in which it can be done, the proximal bone with its incrusting cartilage untouched in the stump. The advantages he claims for this are that "exarticulation is quicker, easier, requires simpler instruments, and is attended with far less bleeding (from our having to deal, as a rule, with the main arterial trunk), than amputation in the continuity. By not touching the cartilage we can keep further from the trunk, have a longer stump, and not expose the very vascular and, hence, very absorbent end of the long proximal bone.

"There are here very great and important benefits which need not be enlarged upon. The risks of septicæmia and osteo-myelitis are reduced to the lowest attainable point as the bone (the chief agent of absorption in stumps) remains sealed. Operations thus performed are attended with much less shock—the integuments preserved are, as a rule, those best fitted for withstanding pressure—there is vastly less risk of injury to the flaps and bloodvessels and nerves by the action of the unsawn bone acting on them, and hence we need not fear protrusion or pain subsequently—we are less apt to be troubled by the retraction of the muscles, as their close adhesion to the bone down to its end is not weakened—the power of sustaining the pressure of apparatus is much earlier acquired, and the point of support is broader and better fitted for pressure than when the bone has been divided. If to this we add that the anastomosis of the bloodvessels in such flaps is very quickly established from the large supply of twigs on the level with joints—that we have no bleeding from the bone to deal with or dread, and that a false limb can with perfect success be fitted so as to retain the joint motion with a stump of the natural length, all the leading advantages of the mode of operating dealt with will have been stated, and it must be allowed that such advantages are neither few nor inconsiderable.

"Of course, we cannot amputate through a joint the seat of malignant disease; but it is in secondary amputations for accident that the most marked good is obtained, and it is in such cases that the great dangers of septicæmia and osteo-myelitis are apt to arise.

"It may be further added that the redundant size of the articulating head of the bone, which is in some cases left in the stump, in time disappears, and it becomes beautifully rounded and well adapted for the end of a stump."

34. *Penetrating Wounds of the Knee.*—M. GAYET, Surgeon of the Hôtel-Dieu at Lyons, on the strength of eight cases treated in that hospital, arrives at the following conclusion: 1. A penetrating wound of the knee-joint, made by a pointed instrument, and unattended by complications, is without danger, providing it be allowed to cicatrize in a state of rest and immobility. 2. The same wound may give rise to the most dangerous arthritis when not properly attended to. 3. The danger of arthritis is in direct proportion to the extent of the wound and the difficulties which impede its union by the first intention. 4. The complications dependent upon injuries of the bones are extremely serious; but fractures of the patella, however complicated they may be, need not, if they exist alone, lead to amputation or excision. 5. The presence of foreign bodies, however small these may be, induces arthritis and its possible consequences, and demands amputation or excision. 6. All things being alike, posterior wounds seem more serious than anterior ones, by reason of the density of, and number of the tissues concerned, the presence of vessels, etc. 7. These conclusions having been deduced from observations made in a hospital—i. e., in a medium little favourable to conservative surgery—they may be regarded as more favourable when applied to media of a more healthy character.—*Med. Times and Gaz.*, Jan. 30, 1875, from *Lyon Médical*.

35. *Suppurating Ovarian Cysts*.—Mr. THOS. KEITH states (*Edinburgh Med. Journ.*, Feb. 1875) that operation ought to be the rule of practice in cases of acute suppurating cysts, or when typhoid symptoms come on after tapping. He has met with eleven cases of acute suppurating cyst, besides two chronic cases. "In all these," he says, "save one, the chance of ovariectomy was given, however hopeless-looking the case might be. In the exceptional case, ovariectomy would also have been performed, had it been possible to remove the patient from her poor home and unfavourable surroundings. She was seen with Dr. Menzies on the third day after her fourth confinement. He had been called to her for the first time only the day before. A large ovarian cyst had existed with at least two of her pregnancies. The distension was so enormous that urgent dyspnoea had to be relieved at once by tapping. Upwards of six gallons of fluid containing much blood and pus were got away, and ovariectomy was agreed on as soon as she could bear removal. This could not be accomplished, and after three weeks, tapping was again had recourse to. This time the pus was intensely putrid, and as the canula got choked with pieces of fetid lymph, an incision sufficient to admit two fingers was made into the cyst, and its putrid contents thoroughly cleared out. Fortunately the cyst was single; a perfect recovery took place, and this patient had two children since. None but the strongest of women could have borne the exhausting suppuration that went on for nearly four months. Pulse and temperature remained high, and of at least six weeks of her illness she has now almost no remembrance. Recovery in such circumstances must be rare; yet it may be well to note, that during the whole time she was supported entirely on milk and butter-milk, and had no stimulants whatever; neither was there any washing out of the cyst.

"Of the ten more or less acute cases operated on, eight recovered, while the two chronic cases got well easily." He relates a series of seven of his acute cases which occurred in the course of his second hundred operations, for ovarian tumours, six of which recovered.

"In all the acute cases, there was pain or tenderness somewhere on pressure. In all, the pulse was rapid and feeble; exhaustion and emaciation were great.

"As a rule, there was increase of temperature to a very great degree. This varied from 100° to 102° in the morning, to 103° or even 105° by evening. In all cases where the temperature was very high, there was a fall of several degrees within a very few hours after operation.

"But two cases, and these were the most hopeless-looking of the whole number, were remarkable on account of the extreme lowness of temperature. In the third case, the temperature at the time of operation was only 95.5° . This is the more unusual from the circumstance that the contents of the cyst were intensely putrid. For some days before operation, there was a steadily rising pulse, and a steadily falling temperature. In the sixth case, where a suppurating cyst had burst into the peritoneum, the temperature at the time the patient was operated on, was 97° . In both of these, the temperature rose within six hours after removal of the tumours; in one case from 95.5° to 97° ; and in the other from 97° to 100.5° .

"In one of the acute, and in one of the chronic cases, there was no adhesion. In the others, adhesions were of the gravest nature, and the operations were tedious and severe.

"In five cases the pedicle was treated by the clamp; in five by the cautery. One death followed each method. Death took place about sixty hours after operation from blood-poisoning. Both were looked upon as most unfavourable subjects for ovariectomy. In one, the chances were guessed at as twenty to one against the patient; while in the other, some of my friends remonstrated with me as to doing the operation at all.

"In only two, did typhoid symptoms come on quickly after tapping, and in one case, tapping was had recourse to in the hope of relieving pain set up by a long journey to town. Five had not been tapped, and in the others no symptoms of distress appeared within less than five weeks after it. The simple tapping had probably little or nothing to do with the after suppuration. The usually received opinion, therefore, that suppuration in ovarian cysts is almost always the consequence of some interference, requires modification. So does the

statement that when there is pain or tenderness this generally arises from inflammation of the peritoneal surfaces; the reverse is oftener the case. Tenderness or pain, if long continued, is almost always a certain sign that irritation is going on in the tumour somewhere. Simple surface tenderness, causing surface adhesion, rarely lasts long; and the worst cases of adhesion met with have often no history, either of pain or tenderness.

"The extreme feebleness of pulse, and depression of the vital powers, which all cases of acute suppurating cyst present, must not deter one from operating. Hopeless without interference, they are not the unfavourable cases for operation that they seem, or, judging from the small number of reported successful results, have hitherto been regarded."

36. *Hydrostatic Injection of the Bladder*.—Prof. ZEISSL, of the Vienna General Hospital, has just published an interesting paper on this subject. He observes that one of the most frequent complications of gonorrhœa, especially in the male sex, is a catarrhal inflammation of the bladder. It is, in fact, a complication and not a sequence, being much more frequently met with during the acute stage of the urethral affection than when that has subsided. Among the occasional causes which may lead to the extension of the urethral inflammation to the bladder may be ill-timed or unskilful catheterism, the improper use of injections, and the administration of too large doses of balsamic medicines, of digitalis, or cantharides. He has met with many cases in which injections of red wine or concentrated solution of tannin at the commencement of gonorrhœa have given rise to this affection of the bladder. The objection that red wine could not act mischievously on the urethra, when it excites no irritation on the mucous membrane of the mouth or stomach, can only be raised by those who are unaware of the varieties of sensibility in the various mucous membranes. The urethral mucous membrane at its most anterior and its most posterior portions is incomparably more sensitive than the membrane of the eyelids and the eye. Fluids which scarcely affect these parts irritate the normal, and still more the diseased, urethra to such an extent as to induce tenesmus and dysuria. The tenesmus of the neck of the bladder is soon accompanied by effusion of blood from a mucous membrane so abundantly supplied with capillaries. When a few drops of blood are first observed at the end of each voiding of the urine, the cystitis is just commencing, and if the irritation be continued may soon go on to true hæmaturia. With the increased hæmaturia also there is great dysuria, the patient being obliged to discharge a small quantity of urine every few minutes. Under spasmodic action of the sphincter of the bladder, a small quantity of turbid mucous urine is forced out, and is followed by some bright red drops of blood. When the urine remains for ten or fifteen minutes in contact with the catarrhal mucous membrane of the bladder, the blood that is suspended in it becomes coagulated into smaller or larger clots. These coagula, in fact, are the chief proof that we have to do with a commencing hæmaturia vesicæ, as in renal hæmaturia the blood, which is mixed with urine, is never exhibited in the form of clots.

As a general rule, vesical hemorrhage in gonorrhœa only continues for a few days. Sometimes, however, it becomes so considerable that the urine is coloured intensely by the coagula; and in some cases the hemorrhage may be such as to cause great debility and endanger the patient's health. In order to allay this, the patient must be kept in a state of absolute rest, while cold applications should be made to the hypogastric and sacral regions, and to the perineum. If these means do not suffice, internal hæmostatics, such as a solution of alum and perchloride of iron, may be employed; and when these too have failed, it has been hitherto the practice to inject the bladder through a catheter with cold water or astringent fluids. Although in many cases these injections may have exerted a favourable influence, yet they not infrequently give rise to mischief of another kind. The introduction of even so soft an instrument as Nélaton's catheter several times daily into the bladder not infrequently causes irritation, so that inflammation of one or both of the vasa deferentia, epididymitis, or prostatic result, compelling abandonment of this procedure. It becomes, therefore, very desirable that some means should be devised

for injecting fluids into the bladder without the introduction of a catheter. Of late, high hydrostatic pressure has been frequently employed for the injection of cold water into the intestinal canal for the purpose of overcoming obstinate constipation; and Hegar has employed his apparatus (which consists in a funnel with an elastic tube, to which a catheter is attached) for injecting the bladder in women. The object is, however, to dispense with the introduction of the catheter into the urethra, and this Prof. Zeissl accomplishes in the following manner: He provides himself with one of Esmarch's irrigators (for which, indeed, the funnel used by Hegar might be substituted), and the patient is placed on his back, with the buttocks raised. Cold water or an astringent fluid is placed in the receptacle of the irrigator, which is either held up as high as possible by an assistant or fixed at the desired elevation. The operator then, keeping the penis with his left hand against the abdomen, directs the pipe of the irrigator into the ostium cutaneum urethræ. The fluid thus passes into the bladder by mere hydrostatic pressure, the patient, after a few minutes, perceiving with a great sense of comfort that it is entering the organ. In this way from four to eight ounces of the fluid may be injected into the bladder, not only without any ill effect being produced, but, on the contrary, to the great comfort of the patient and to the relief of his malady.—*Med. Times and Gaz.*, Jan. 30, 1875, from *Wiener Med. Woch.*, Dec. 19 and 26.

37. *Spasm or Tenesmus of the Muscular Portion of the Urethra and Neck of the Bladder cured by Cystotomy.*—M. PARONA, Surgeon to Novare Hospital, assisted M. Bottini a short time since when the latter surgeon performed subcutaneous incision of the neck of the bladder in a case similar to the one about to be related. Although in Bottini's case the patient did not remain long without a return of the symptoms, M. Parona determined in his case to adopt a somewhat similar plan, but to be more energetic in his treatment. In July, 1873, a young man of good constitution, æt. 22, consulted him, and stated that since a gonorrhœa contracted at the age of fifteen he had been suffering. He was advised to enter the hospital at Novare, and M. Parona recognized most of the symptoms which he had observed in Bottini's case—viz., no discharge, vesical irritation, painful contractions at neck of bladder during micturition, irregular jerky stream, urine normal and without parasites, catheterism easy in the greater part of the urethra, but possible only at the region of the neck when the resistance was tired out, bladder healthy. M. Parona arrived by the method of exclusion at the diagnosis of "spasm or tenesmus of the muscular portion of the urethra at neck of bladder." He first tried antispasmodics—bromide of potassium, belladonna rubbed into the perineum, chloral, morphia, and then forced dilatation of the neck of the bladder—but without success. He then hesitated between intra-urethral section of the neck of the bladder and cystotomy, and decided on the latter for the following reasons:—

1. In incising the neck with Mercier's instrument one runs the risk of not cutting enough of the muscular fibres and of not obtaining a permanent cure, as in Bottini's case.

2. This operation exposes the patient to the dangers of hemorrhage, of accumulation of blood in the bladder, of infiltration of urine in the wound, and its absorption may lead to the most disastrous consequences.

3. It is difficult with Mercier's instrument to divide the membranous urethra, which participates in the alteration at the neck and necessitates the same treatment.

4. In the history of surgery one finds many cases of cystotomy followed by permanent cure. Miche-Ange Aasson relates a case of a woman who suffered from a vesical neuropathy which was taken for a vesical calculus and was cured by cystotomy. Roux relates an instance in which he did lithotomy on one of his confrères and found no stone, but the patient recovered rapidly from the operation and the symptoms vanished. The celebrated Medoro, surgeon of Padua, relates a similar case, and others are reported by Borsiori, Ucelli, Vekpeau, and Dolbeau, who, in his *Leçons de Clinique Chirurgicale*, does not hesitate to recommend this treatment for the spasmodic affections of the neck of the bladder, arguing from the happy effects which follow incision in affections

of a similar nature of the rectal sphincter. (If we mistake not, Mr. T. Holmes and Mr. Bickersteth (of Liverpool) have reported similar cases, and the latter surgeon suggested opening the bladder by the lateral method in painful bladder affections.) (See 1st No. of *Liverpool Hospital Reports*.) Mr. Bryant has recently adopted this plan.

Convinced by these facts M. Parona determined on cystotomy, and on 24th October operated in the following manner: Median incision into urethra, introduction of Dupuytren as for lithotomy, large *débridement* of the neck of the bladder. In a month the patient was well and free from his former sufferings.

M. Parona makes the following concluding remarks:—

1. Palliative means, which one should always try, are in a great number of cases absolutely inefficacious.

2. The surest treatment is incision of the neck of the bladder.

3. Cystotomy should be preferred to intra-urethral section.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1875.

38. *Subcutaneous Urethrotomy*.—Mr. TEEVAN exhibited to the Clinical Society a patient, aged thirty-one, upon whom he had performed this operation. The man had suffered from a severe stricture for seven years. Six years ago he had some form of extravasation, which necessitated his entry into Charing-Cross Hospital, where the abscess was opened and a catheter passed into the bladder. Three years ago he came under Mr. Teevan's care for a tight stricture, complicated with a fistula and occasional attacks of retention. By gradual dilatation with soft bougies, the stricture was enlarged to 7, English gauge, and the fistula cured. As dilatation could not be carried beyond the size mentioned, the patient was taught to pass a No. 5 bougie for himself, inasmuch as a larger instrument always set up irritation and made him worse. After three years' absence, the man again came under Mr. Teevan's care last October, complaining that, for the three years he had been away, he had never gone longer than three days without an attack of retention, and was often obliged to pass the bougie six times a day. It was clear, then, that the bladder was not at fault, for a bougie always sufficed to relieve the retention. Continuous dilatation, and various remedial measures having utterly failed to cure the patient of his repeated attacks of retention, Mr. Teevan, on November 16, subcutaneously divided the stricture, which was situated in the centre of the perineum, and was three-fourths of an inch long, on a grooved catheter-staff, with a sliding catheter. A fine tenotome was used for the operation. The shoulder of the sliding staff having been clearly made out, the skin was pierced in the raphé of the perineum, and the tenotome inserted into the slit in the catheter-staff and run along to its end; the mucous membrane and stricture being afterwards divided with a sawing movement. No anæsthetic was given, and not more than a dessertspoonful of blood was lost. The urine drawn off was very slightly tinged with blood. Mr. Teevan apprehended the patient would have rigors, as he had previously been attacked with them, and he therefore tied in the elastic catheter and gave the patient ten-grain doses of quinia just to demonstrate the inutility of those stock remedies, and to show that American surgeons were right in their views regarding the retention of a catheter after operation. Twenty hours afterwards, a rigor occurred, and the catheter was withdrawn. The puncture was healed in forty-eight hours. The after-treatment consisted in passing a large olivary elastic catheter every third day, and the patient left St. Peter's Hospital quite well on December 3, holding his water for six hours, passing a good stream, and not having had an attack of retention since the operation. Mr. Teevan remarked that the case imperatively called for operation, as the patient could not follow his avocation. He had selected this particular operation as he considered it specially indicated in the present instance. External urethrotomy would have been a severe procedure, as there was neither abscess nor fistula. He discarded the splitting operation, as that method was the most fatal of all urethral operations, and was followed by speedy and aggravated relapses. There remained, then, only internal urethrotomy and subcutaneous section, and he preferred the latter, as he

knew he could by it completely divide the stricture, which encased the urethra like an iron hoop. He stated that he believed he was the first surgeon who had ever divided a stricture in this country on a catheter-staff, with a slit in it for the knife to run along. He drew attention to the fact that scarcely any scar was visible at the point of operation.

In answer to some remarks, Mr. Teevan said he was confident that the man would have a relapse unless an instrument were passed from time to time. In all cases of stricture, relapses occurred after every operation, unless the dilatation was kept up by the passage of an instrument from time to time. He could now, at the end of a month, pass as large a catheter as before the operation; the period of relapse was more deferred than with other operative methods; the operation also occasioned the minimum amount of danger. Sir W. Fergusson, he believed, had never used a catheter-staff with a slit in its convexity for the knife to run in. The great advantage of the catheter-staff was, that it drew off the urine before the operation, so that the operator knew beforehand that he was cutting in the right direction. The instrument was first used in New York, but the literature of this country did not mention it. The wound was to all intents subcutaneous, for, although a small puncture was made with the tenotome in the skin of the perineum, and the instrument then divided the mucous membrane and stricture together, yet, immediately upon its withdrawal, the external opening was closed with lint, and at once healed. Infiltration might occur after any urethral operation, but it was almost unheard of. He had tied in a catheter simply to show that it would not prevent rigors.—*Med. Times and Gaz.*, Jan. 23, 1875.

39. *Diffuse Phlegmonous Periostitis*.—At a recent meeting of the French Academy of Medicine, M. GIRALDES read a paper "On the Treatment of Diffuse Phlegmonous Periostitis." He is desirous, he says, of drawing attention to certain points in the treatment of this severe affection, which is especially met with in children and adolescents of the poor. Well described formerly by Schutzenberger, of Strasburg, it seems to be very imperfectly known at the present day. Under the designations of "subperiosteal abscess," "juxta-epiphysic osteitis," "detachment of the epiphyses," and "diffused osteomyelitis," surgeons have only been describing the terminal phases of one and the same disease, and confusing the history of the affection. Referring to Schutzenberger's memoir for the complete account of the disease, M. Giraldès only alludes to those of its features which illustrate the value of the communication he is making:—

"Diffuse phlegmonous periostitis is an affection which commences in a very acute form, being preceded by severe pains at a point of the segment of a lower, and sometimes of an upper limb, and accompanied by an elevation of temperature which oscillates between 39° and 42° C. The assemblage of symptoms is such that frequently it has been mistaken for the commencement of a bad typhoid fever or hyperacute rheumatism. The evolution of the disease is so rapid that it soon terminates in suppuration, and vast purulent collections occupy the points of the limb which were the seat of the severe precursory pains. The inflamed periosteum, the origin of this suppuration, becomes detached from the bony diaphysis, carrying away with it the osteo-plastic layer which is concerned in the growth and reproduction of bone—leaving the diaphysis of the bone denuded, sometimes throughout its entire extent. The bone thus deprived of its nutritive membrane becomes necrosed, its medulla inflaming and suppurating, and its epiphysic cartilages undergoing softening. These various alterations are only the consequence of the same morbid process, and they have been wrongfully regarded and described as being the point of departure or primary seat of the disease.

"These vast purulent collections urgently demand surgical intervention; but whether they are evacuated by means of large incisions, or by drainage as recommended by M. Chassaignac, a necrosed bone remains at the bottom, keeping up suppuration. Around this diseased bone the periosteum readily ossifies, forming a bony sheath around the necrosis, constituting what is termed in surgery an invaginated necrosis. This, at a later period, has to be opened

either by the gouge or trephine for the removal of the necrosed bone and the cure of the fistulæ which are exhausting the young subjects of the disease. Until the year 1865 I treated by this procedure all the cases which came under my observation: but at that time Prof. Holmes published in the *Lancet* (for April, 1865) a case of diffused phlegmonous periostitis of the leg, in which, after having opened the abscess, he at once removed the necrosed tibia. This practice of the English surgeon being in accordance with the results of the experiments on the regeneration of bone obtained by Flourens and Syme, and at a later period Ollier, I was induced to adopt it. . . . From that time to 1873—that is, for seven years—I treated by this procedure the numerous cases of diffused phlegmonous periostitis that were placed under my care. The lower half of the tibia and of the fibula, the entire calcaneum, and the bones of the metatarsus have thus been removed. The result of the operation, which is of easy execution, is to procure rapid recovery and save the child from exhaustive suppuration. It should therefore be substituted for the old procedure of waiting until the bone becomes mobilized in the bony cage in which it is inclosed. In doing this, abundant suppurations (which exhaust the young subjects) are allowed to persist; and when it is sought to arrest these and cure the fistulæ, a laborious operation, which is not always without danger, has to be performed.

“To sum up: I may say—1. In diffused phlegmonous periostitis of the lower limb, advantage attends the prompt removal of the necrosed bone immediately after the evacuation of the abscess. 2. This practice does not seem to me to be applicable to the femur or even to the upper portion of the humerus. 3. In performing this extraction of necrosed bones great care should be taken to maintain in their normal positions the different parts that are attached to the segment of the affected limb. 4. This contention is very advantageously effected by means of the plaster apparatus—plaster grooves (*gouttières plâtrées*) moulded on the limb—which I have employed in diseases of the joints since 1863.”—*Med. Times and Gaz.*, Jan. 23, 1875, from *Bulletin*, Jan. 12, 1875.

40. *Antiseptic Incisions an Aid to Surgical Diagnosis.*—MR. THOMAS ANNANDALE states (*Edinburgh Med. Journ.*, Jan. 1875) that he has during the last few years made a free use of special exploratory incisions, with the important addition of careful antiseptic treatment of the wound, and having learned its value and safety he urges its more frequent use as an aid to surgical diagnosis in important surgical affections. He adds that “in affections of the extremities the employment of the ‘bloodless’ method of operating is, in suitable cases, a valuable assistance in making such investigations, for the various tissues can now by this means be seen and examined as conveniently as in the dead body.”

He thinks these antiseptic incisions are valuable in the following classes of cases:—

“*First.* In obscure cases of suppuration.

“In abscesses, or suppuration occurring in the abdominal or pelvic cavities, or in some of the important surgical regions, the presence of pus cannot always be detected by the exploring needle, and I have on several occasions discovered a collection of pus by an antiseptic incision, having previously failed to obtain this information by the use of the former means. An additional advantage in such cases is that the introduction of a finger will usually determine definitely the situation and cause of the condition; and the great importance of detecting *early* the presence of pus, so as to allow of its being removed, is recognized by all practicable surgeons.

“*Second.* In cases of obscure morbid growths, or doubtful solid swellings.

“The question of treatment which arises in such cases can only be determined by an accurate knowledge of the nature and connections of the diseased condition. In some instances careful external examination, and a study of the history of the affection, may be sufficient for the purpose, but there are other cases in which a proper diagnosis cannot be made by these means alone. In these latter cases, an incision carefully made in a convenient situation, so as to allow a finger to be introduced, will surely decide any doubtful points, and determine what treatment is most likely to be beneficial. I have in this way received valuable infor-

mation in regard to the treatment of obscure cases of tumour or swelling in connection with the jaws, groin, and other regions."

"*Third.* In diseases of joints.

"When suppuration has taken place in the interior of a joint, the well-recognized practice is to evacuate the pus by incision as early as possible, with the object of preventing or limiting further mischief. In suppuration of some of the deeper joints, such as the hip, it is not always possible to detect by external examination the presence of pus, and therefore surgical interference in such cases is usually delayed until fluctuation has become more distinct. But delay under these circumstances is not advantageous, and the joint structures and surrounding tissues all suffer during the progress of the suppuration, and consequently the result cannot be so satisfactory in the majority of instances as when the pus is evacuated at an earlier period. I have relieved by an antiseptic exploratory incision five or six cases of commencing suppuration of the hip joint, and ascertained the exact condition of the articular surfaces, in which no distinct external signs of the presence of pus could be detected. Without the aid of antiseptics in these cases I would have hesitated to open into so important a joint."

"*Fourth.* In injuries of a doubtful nature.

"Cases of dislocation or fractures near joints are occasionally very difficult to diagnose, and if such diagnosis be important in connection with the treatment and satisfactory result of the case, I would not hesitate to make an exploratory incision, with the aid of antiseptics, provided other methods of examination failed to give the proper and full information.

"Sharp fragments of bone, which may be perilling important bloodvessels or other structures, in cases of simple fracture, may be examined, and, if thought right, removed by such an incision; and I have reported a case of this kind in which I successfully extracted a sharp and separated portion of a fractured clavicle, lying over and endangering the subclavian artery.

"*Fifth.* In obscure affections of the internal viscera, which admit of being relieved by surgical means.

"Cases of intestinal obstruction, calculus of the kidney, and tumours or swellings in connection with the abdominal or pelvic viscera, of conditions simulating these various affections, frequently give rise to dangerous symptoms, and if such conditions have failed to be relieved by ordinary carefully-applied methods of treatment, it seems to me perfectly justifiable that surgery should be resorted to, if the condition is one in which there is even a chance of its being relieved or cured by surgical assistance.

"Owing, however, to the difficulty of correct diagnosis in many of these cases, the surgeon hesitates to interfere, and it is in such cases that I would advocate an antiseptic incision, in order to determine if and what operative interference can be of service."

Examples are given in most of these classes of cases in which great advantage was obtained by this means of diagnosis.

Mr. Annandale considers that the application of the principle of exploratory antiseptic incisions is by no means limited to the conditions enumerated.

41. *Bloodless Surgery.*—Mr. CHIENE read before the Medico-Chirurgical Society of Edinburgh a review of Esmarch's method of operating after elastic compression of the limb, and with an elastic cord instead of a tourniquet. Mr. Chiene discussed the advantages and disadvantages of each of these plans. The gist of these remarks was, that the elastic compression was inapplicable and dangerous in many cases, from its driving back into the circulation cancer or putrid fluids; that it was too perfect, as it emptied even his smaller capillaries, and thus prevented the formation of a proper coagulum in the larger vessels. He much preferred a method which has for years been in use in the Edinburgh Infirmary, and which he believed was introduced by Mr. Lister, namely, to elevate and bandage with a common roller the limb to be removed. He also much preferred the ordinary tourniquet to Esmarch's elastic one, because the latter cannot be slacked off gradually, but must be removed entirely, so that much blood may be lost in tying the vessels. Mr. JOSEPH BELL

agreed in many of Mr. Chiene's theoretical objections to Esmarch's method. He had given it a very full trial, and believed that, while it was easily managed with good assistants in hospital practice, the old-fashioned tourniquet was much more suitable for cases in private, especially in the country, where few skilled assistants were to be had. He liked Esmarch's method much in cases of necrosis or excision of joints such as the wrist-joint, which demand careful dissection, and in which the wound could be plugged, and thus all bleeding stopped before the elastic cord was removed. He also thought it of great advantage in all cases in which needles, splinters, bullets, etc., had to be sought for, as it entirely removed any bleeding, and also rendered the parts partly anæsthetic.—*British Med. Journ.*, Feb. 6, 1875.

42. *The Induction of Local Anæsthesia by Esmarch's Bloodless Method.*—M. LANNELONGUE read to the Surgical Society of Paris a report on a paper submitted by M. CHAUVEL. M. LE FORT having related to the Society a case of excision of the elbow which he had performed by Esmarch's bloodless method without the patient having felt any pain, M. Chauvel communicated the results of some researches upon the subject which he has been making at the Val-de-Grâce, where he is an *agrégé*. M. Lannelongue observes that it would indeed be a welcome fact if we were able to add to the already great advantages derivable from Esmarch's bloodless method the suppression of sensibility in the parts concerned. M. Chauvel first details fifteen experiments made upon himself and others, and then relates three cases which he regards as corroborative of the results obtained from these. In all but one of the fifteen experiments diminution of sensibility was observed after a period varying from five to fifteen or twenty minutes, the insensibility occurring much sooner in the upper than in the lower limbs—the amount of constriction exerted by the bandage, and especially by the caoutchouc tube, greatly influencing the period of development and the degree of the local anæsthesia. M. Chauvel admits that the anæsthesia is almost always incomplete, and the reporter expresses himself dissatisfied with his mode of testing sensibility, and with the distinction between tactile insensibility and insensibility to pain. Moreover, the experiments have been confined to the skin, and no deduction can be drawn from them as to the insensibility of the deeper-seated parts.

The clinical portion of the memoir is really that whence deductions can alone be surely drawn; and here M. Chauvel has not much to offer, being only able to produce three cases in which the plan has been tried in the present point of view. Two of these were examples of ingrowing nail, requiring operations which were attended with very little suffering. These M. Lannelongue considers as quite insufficient to establish the fact of insensibility being induced by compression, having regard to their short duration, to the fact that absolute insensibility was not attained, and bearing in mind the very different amount of suffering that is caused by this operation in different patients. The third case is still less conclusive, consisting as it did in the supposed abolition of sensibility to the actual canterly in a soldier who was strongly suspected of malingering. Many facts in operative surgery may also be cited in proof that no such immunity from suffering attends the employment of compression. We do not find by depriving a part of its arterial blood, and placing it in a state of total ischæmia, that we destroy its sensibility. Thus the ligature of the principal limb, and even of the aorta itself, is not attended with this effect; and Longet states that in the five instances in which he tied the aorta in dogs, the sensibility of the lower limbs was never abolished, and the irritation of the sciatic nerve or its branches proved as painful as in the normal condition.

“It is true that Esmarch's procedure not only induces ischæmia, but renders the part anæmic in the extreme. Still, it does not absolutely deprive it of all the venous blood it contains, as is shown by the red colour of most of the tissues. Moreover, elastic compression is quite unable to expel the blood comprised within the different portions of the skeleton which compose a limb. Probably, too, exemption applies also to the nerves, the circulation in which takes place by means of long anatomical arcades, the origins of which in the important nerves are very near the origins of these nerves themselves—that is, at

points where compression cannot be exerted. These circumstances might be advanced to explain the persistence of the nervous functions were it demonstrated that the suspension of all circulation in a nerve, during a time too short for the nutrition of the nerve to be disturbed, suppresses its physiological properties. But it need not be said for this that sensibility undergoes no modification during compression of the limbs, and I may cite the fertile experiments performed lately by Laborde. Immediately after the application of Esmarch's apparatus to one of the hinder limbs of a healthy dog (he says), pricking, pinching, and burning do not give rise to any motor or subjective reaction indicative of a painful manifestation. Forceful pinching of the matrix of the nail, which is especially painful in dogs, gives rise to no apparent sensation; and if some nervous filaments of the two branches of the sciatic have been exposed and are pinched, neither do they give rise to any sensational reaction. M. Laborde has further shown that this anæsthetic period does not last upon the average more than three minutes, during which time it is constant. It is succeeded by a new phase when the sensibility regains its normal rate, but which also only lasts two or three minutes, this being followed, in its turn, by a very characteristic hyperæsthetic period, which continues with exacerbations, its greatest intensity occurring at the eighth or ninth minute. From these experiments it would seem to result that we ought to choose the initial period of the anæsthesia in order to avoid the pain in operations; but its short duration and the hyperæsthesia which succeed it, offer but few guarantees for most operations."—*Med. Times and Gaz.*, Jan. 2, 1875, from *Gaz. des Hôp.*, Dec. 12.

OPHTHALMOLOGY.

43. *Amaurosis from a Carious Tooth.*—Dr. P. LARDIER records (*L'Union Médicale*, Dec. 14th, 1874) a case of amaurosis in the right eye of a boy eight years of age, who also had chronic conjunctivitis. On investigating the case Dr. Lardier was finally led to suspect these troubles to be the result of an extensive caries of the first upper molar on the right side. He accordingly extracted the tooth, which was followed with restoration of sight, and under proper treatment the conjunctivitis was afterwards cured.

44. *Iridotomy.*—Dr. WECKER, in an article on this subject, proposes important modifications as regards the method of performing the operation, and the cases adapted for it. He gives a sketch of its history from the time of Cheselden. Mr. Bowman, at the Ophthalmological Congress in London, excited fresh interest in the subject by advocating a plan of incising the iris in cases of zonal cataract, etc., instead of performing iridectomy. In iridectomy the widest part of the artificial pupil is at the periphery, where it is not wanted; in iridotomy the broadest part is central. Mr. Bowman makes a small incision in the cornea opposite the intended pupil, and then introduces a small knife, blunt at the point and back, between the pupillary edge of the portion of iris to be cut and the front of the lens, and then cuts forwards against the cornea. The incision in the iris gapes, and forms a new pupil (*Report of the Ophth. Cong. in Lond. in 1872*; Soelberg Wells' *Treatise*, 3d edit.). Dr. Wecker uses a triangular keratome with a stop and a pair of forceps scissors. The blades are bent at an angle to the shaft, and are introduced closed, occupying very little space, by pressure on the handle. When this is relaxed the blades separate, but without tearing open the corneal wound. These do away with the necessity of cutting from behind forwards and risking the cornea. The instruments are figured, and illustrations of cases are given. He either simply incises the iris (simple iridotomy) or cuts a triangular piece out (double iridotomy). Simple incision of the pupillary margin of the iris is adapted for cases in which the central part of the lens or of the cornea is the seat of opacity, or where the cornea is abnormally curved, that is, in cases in which the patient

can see best through the peripheral portions of the cornea, etc. An incision is made in the cornea with the stop keratome opposite to where the artificial pupil is intended to be made, and the knife carefully withdrawn. The scissors are then introduced closed till opposite the margin to be cut, when they are slightly opened and one blade is passed in front of the iris and the other behind; one snip divides the sphincter pupillæ, and the scissors are carefully withdrawn closed. A drop of atropia is applied and the eye covered. When the aqueous becomes re-secreted, the cut edges of the sphincter will be found to have separated, leaving a good artificial pupil. Every care must be taken not to injure the lens. *Double iridotomy* is necessary where the lens is absent owing to operation or accident, and the pupil has become closed owing to inflammation. The corneal incision is made at the point towards which the stretched fibres of the iris converge. The stop keratome is thrust in within the corneal margin through the iris and false membrane, its point then running parallel with the posterior surface of the same, and is then carefully withdrawn. The scissors are introduced so that one blade passes in front and the other behind the iris and membrane, and these are cut with a quick snip. A second cut is now made, so that the two form a triangle with the apex at the wound. The flap thus formed is retracted by the action of the remaining healthy iris, and an opening remains. In some cases where the iris is much stretched and fairly healthy a simple incision is sufficient. There is very little bleeding. Simple iridotomy is contra-indicated where the iris is wholly adherent to a scar, or hidden behind a dense leucoma, which prevents the operator seeing what he is doing, or where the iris is paralyzed. Double iridotomy should only be performed in cases where the lens is absent.—*Royal London Ophthalmic Hosp. Rep.*, vol. viii. p. 1, from *Annals d'Oculistique*, Sept. and Oct. 1873.

45. *Optic Neuritis, with Complete Loss of Vision; Recovery under Treatment.*—The following case of this was communicated to the Clinical Society (Jan. 22) by Dr. THOROWGOOD. Kate G., æt. 12, was admitted into the West London Hospital October 23, 1873. The history, taken by Mr. Blackman, the clinical clerk, was as follows: The patient had had, five weeks previously, a pain at the lower part of the back from a blow against a desk. Liniment was used; and in a short time this pain left her. Shortly afterwards, a pain came at the back of her neck, with tenderness, swelling, and stiffness on movement. For this, she saw Dr. Thorowgood, who gave her a belladonna and mercury liniment, which she used, and the pain and stiffness went away. A week after this, she noticed a fog before her eyes, which gradually increased, till in a week vision was perfectly lost in both eyes. She was now admitted to the hospital. No sign of disease or injury of spine could be detected. She could just discern between light and shade. On October 24, Mr. Bowater Vernon examined her eyes with the ophthalmoscope. The optic disks were swollen with irregular outline; the veins engorged, and obscured in places; whole fundus oculi paler, and more yellow than normal. No hemorrhage. The same description applied to both eyes. She was not feverish; the organs of the chest were healthy; there was no albumen in the urine. Two leeches were applied to the temples, and three grains of hydrargyrum cum cretâ given every three hours. October 28 she was much the same; to have thirty minims of liquor hydrargyri perchloridi three times daily in decoction of bark. Leeches were again applied to the temples. On November 1, Mr. Vernon examined the eyes again. The right optic disk was much swollen; its outline was completely obscured. The fundus was ash-gray in colour. The left eye had the surface of the disk marked by apparently numerous small vessels. Under treatment with iodide of potassium, and then liquor strychniæ with iron, this patient improved; and on December 23, 1873, was seen as out-patient, and able to read well. On January 22, 1875, she was seen again, and her vision, tested by Mr. Vernon with Snellen's type-board, was declared normal. The left eye was rather better than the right, which was, perhaps, not quite up to the normal range. The optic disks looked pale and anæmic. In commenting on the case, Dr. Thorowgood said that Mr. Vernon considered the case one of true optic neuritis, not a mere congestion from impeded return of blood to the

sinuses. The question was, had the spinal pain any connection with the neuritis? In cases of loss of vision due to spinal disease, atrophy of the disk might be expected from the great sympathetic being involved. The present case seemed one of basic meningitis extending to and involving the optic nerves. Meningitis might be very insidious in its progress, and might do much mischief, if not controlled by treatment. The present case showed the value of the ophthalmoscope in detecting meningitis, and so guiding to a plan of treatment by local depletion and mercurial medicines, which proved very successful.—*Brit. Med. Journ.*, Jan. 30, 1875.

MIDWIFERY AND GYNÆCOLOGY.

46. *Injectiōns of Hot Water as a means of arresting Uterine Hemorrhage.*—

Dr. WINDELBAND states that his attention was called by the perusal of an article by an American practitioner, to the effect of injections of hot water as a means of arresting hemorrhage from the uterus. In a case of abortion with alarming hemorrhage, for the restraint of which ergot and cold water injections had failed, Dr. Windelband injected water at about 100° Fahr. Within a short time, or rather at the moment of entrance of the fluid, such energetic contraction of the uterus took place, that the ovum, which could but just be felt within the open os uteri, was ejected with its membranes from the uterus in a quarter of an hour. For some days, he repeated the injections, when there was any indication of bleeding, and afterwards continued them at a lukewarm temperature until involution of the uterus was complete. He says that he has used injections of hot water with the best results in a number of cases which have occurred in his practice during the last year, including twenty-one cases of abortion, two cases of severe hemorrhage from placenta prævia, cases of hemorrhage attending fibroid and other tumours of the uterus, cases of carcinoma, of *post-partum* hemorrhage, of profuse menstruation, etc. He is convinced that the hot water exerts a far more energetic action on the muscular structure of the uterus, than cold water, either alone or with astringent remedies in solution. He makes the injections with an ordinary uterine douche, the water having a temperature varying from 95° to 100° Fahr.; and has never found any disadvantageous results.—*Brit. Med. Journ.*, Feb. 13, 1875, from *Allgemeine Medicin. Central-Zeitung*, Jan. 27, 1875.

47. *Hydrops Amnii*.—Dr. CHAS. J. EGAN, Assistant-Surgeon Grey's Hospital, King William Town, Kaffraria, relates (*Med. Times and Gaz.*, Jan. 9, 1875) three cases of this (in one three gallons of water were discharged), and calls attention to the following points as worthy of notice:—

1. *The Delay to the Labour*.—This is the only point mentioned in regard to these cases in systematic works on midwifery. The excess of the liquor amnii seems to arise from some diseased state of the amnion, which, while it produces an increased quantity of fluid, at the same time renders the membrane tougher and stronger than usual, so that the muscular contractions of the uterus are unable to rupture it; and, at the same time, the uterus itself becomes weak from over-distension, and its contractions much less effective than natural. In none of these cases was there the least suspicion of syphilitic taint, as I inquired into this subject, and all the patients were mothers of perfectly healthy children.

2. *The Danger of Hemorrhage before the Birth of the Child*.—This I consider arises from the partial separation of the placenta as soon as the pressure produced by the excess of water is suddenly removed. In the second and third cases the clots of blood attached to the placenta point to this as the most probable cause of the hemorrhage. In the first case the placenta was not examined on this point. In Dr. Burns's *Principles of Midwifery* (fifth edition, sec. 23., chap. xv.)—an old work, but yet of much value—it is stated that

labour in which the liquor amnii is in excess is liable to be accompanied or succeeded by uterine hemorrhage, but I do not find this mentioned by other authors.

3. *That the Child is frequently Born Dead.*—Death in these cases, I consider, results from the same cause as the hemorrhage—viz., separation of the placenta in the womb some time before the birth. The anencephalous state of the child in the third case was no reason that it should not have life when born. In the second case the child was alive before the evacuation of the water, as proved by the stethoscope. In the first case I consider that the child being born alive was owing to the fact that the os was fully dilated at the time that the water was evacuated, and that the child, being across, was delivered at once by turning, and before death could occur from separation of the placenta.

The treatment for these cases appears to be—before rupturing the membranes to administer a full dose of ergot, and to apply a binder on the same principle as when tapping the abdomen in cases of ascites; and then, as soon as possible, to deliver the child by turning.

48. *On the Influence of Syphilis in Pregnant Women, under various modes of Treatment.*—Dr. F. WEBER, of St. Petersburg, has given the results of his observations in 129 pregnant women suffering from syphilis admitted into the Obukhowsk Hospital during the ten years 1863–73. Of these patients, 35 were treated only locally or not at all; 35 were submitted to treatment by inunction; in 23, inunction was combined with the external use of iodine (iodide of potassium with tincture of iodine); 19 were treated by the internal use of a combination of iodide of potassium and corrosive sublimate; and in 17 cases iodide of potassium was the remedy used. He gives abundant statistical details, and sums up as follows: In general, the course of pregnancy was interrupted in 25, or 20 per cent. of the cases; this proportion, however, may be reduced, when it is remembered that of the patients four had erysipelas of the head, one recurrent fever, and one exanthematous typhus. 2. Every method of treatment which interferes with the digestive system predisposes to untimely birth. 3. In the cases submitted to simple local treatment, there were 20 per cent. of premature births; in three, however (suffering from typhus and recurrent fevers, and from extensive formation of abscesses), violent fever appears to have been in part the cause of the untimely labour. 4. In pregnant women who were treated by inunction together with local remedies, there was no disturbance of the course of pregnancy. This confirms Professor Sigmund's conjecture, that the inunction treatment has no injurious influence on the course of pregnancy. 5. In women in whom inunction was either accompanied or followed by the internal use of iodine, the percentage of premature births was 37; this, however, may be reduced to 20 by deducting two severe cases of erysipelas of the head. 6. General treatment with a solution of iodide of potassium and perchloride of mercury was attended by 15 per cent. of premature births. 7. In cases treated by iodide of potassium, 42 per cent. of untimely births occurred. 8. The injurious action of general treatment did not in any way correspond to its duration, but much rather to its effects on the digestive organs. Hence general treatment should be interrupted on the first indication of indigestion in a pregnant woman. 9. The period of pregnancy at which general treatment is commenced appears to have no influence on the occurrence of premature labour. 10. The stage of development of the syphilis seems to be not without influence on the occurrence of untimely birth. 11. The puerperal period ran an abnormal course in 4 out of 14 cases treated locally, in 3 out of 8 treated by inunction and iodine, in 3 out of 4 treated by iodine and sublimate (one of these patients died), and in 4 out of 10 treated by iodide of potassium.

49. *Local Use of Liquor Ferri Chloridi in Cancerous Ulcerations of the Uterus.*—Dr. CHARLES J. GIBB reports (*Brit. Med. Journ.*, Feb. 13, 1875) having used with benefit the application of liquor ferri chloridi to cancerous ulcerations of the uterus. "It is," he says, "when the disease is purely epithelial, and chronic, and rodent in character, and confined to the surface, that the treatment I have described does most good, and, as I have said, appears to cure even bad cases. The application of the perchloride rarely causes pain. On

four or five occasions, a patient, on returning home, has been confined to bed for a few days, and, in one of the successful cases, for upwards of a fortnight, in consequence of a severe colicky pain in the region of the uterus, lower abdomen, and back. I am inclined to think that the wool had been over-saturated in the perchloride in such cases, as it has occasionally happened that the solution has flowed from the vagina over the vulva after the patient has left my offices, and those parts been blistered and painfully excoriated as a consequence. On this account, I am now very careful to wash away with a syringe all discharges from the surface of the cancer, and to raise the breech of the patient to prevent any overflow of the solution over the vulva, and after applying the perchloride, to suck up with a sponge from out of the bottom of the vagina any superabundant solution which a slight pressure on the saturated wool over the sore may cause to flow out; after that, to retain the wool in its place by a loose plug of tow in the vagina; and lastly, to dry and oil the vulva before the patient rises from the couch.

I have always used the strongest pharmacopœial solution undiluted, as I have only used it to secure a caustic action. At first, I applied it on a piece of sponge or lint; but finally found cotton-wool to answer best, as it sucks up any quantity that may be required, parts with it easily, and can be moulded into any form, so as to fill a cavity or cover over and adhere to any growth. It has happened occasionally that I have found the cotton-wool still adherent over the sore a week or more after its application, and when removed, it is always a black or chocolate-coloured mass, frequently quite solid, from the quantity of blood or albuminous matter absorbed in its meshes and clotted therein; indeed one patient gravely told me she had passed a solid brown egg a few days after one of her visits. No doubt it was the hardened wool, although she declared she had cleared out the vagina the day after her visit.

50. *Torsion of the Pedicle of the Ovary*.—KOEBERLÉ agrees with Rokitsansky that some of the pedicellated pelvic viscera are liable, from the various movements of the body, such as lying on the side, etc., to become rotated on their axis, and even undergo a veritable torsion. In the case of the ovary this torsion may take place slowly, in which case it will give rise to but few symptoms; or suddenly, in which case it will cause symptoms that will make the diagnosis possible, such as pain, and the rapid formation of a cystic tumour. This accident happens most readily during menstruation. Immediately after some sudden twist or turn, the patient experiences a sudden and prolonged pain in one hypogastric region, accompanied by numbness of the corresponding thigh and pain in the region of the kidneys, sometimes also by vomiting. This pain is exacerbated at intervals, and may become so intense as even to call for the operation of ovariectomy, though the tumour itself is very small. As a consequence of this torsion the return of fluids through the veins and lymphatics is retarded; these vessels become dilated, and a cyst is formed. This cyst is usually unilocular, and contains a brownish fluid mixed with blood, or, in some cases, coagulable lymph.

Koeberlé has seen some cases in which the ovary was entirely detached. It had, however, contracted vascular adhesions with the surrounding viscera, from which it drew its nutritive supply. He has also seen cases of torsion of the pedicle of a fibrous tumour in which the lesion was diagnosticated.

Schutzenberg has seen a uterus, which contained a large fibrous tumour, thus twisted. The woman was suddenly attacked by violent pain after turning herself in bed, leucorrhœa, with a small pulse. On her death, which followed soon afterwards, it was found that the uterus and the vagina had turned once completely round. There was great congestion at the fundus, with subperitoneal exudation of blood.—*Irish Hospital Gazette*, March 1, 1875, and *Rev. des Sciences Méd.*, Jan. 1875.

51. *Metro-peritonitis following the Use of the ordinary Female Syringe*.—DR. THOMAS MORE MADDEN said, at a meeting of the Dublin Obstetrical Society (Feb. 13, 1875), that the ordinary vaginal syringe is the most frequently used

instrument in gynaecological practice, being employed in nine-tenths of the cases of real or suspected uterine disease, and as it is freely ordered by medical men, and habitually used by patients without any special caution or apprehension of possible danger, Dr. More Madden thought that the history of a case showing that this instrument is by no means as harmless as it is commonly supposed to be, was not undeserving of the consideration of the Obstetrical Society. The case was one of intense uterine colic followed by severe metro-peritonitis, which came on suddenly during the use of an astringent injection with the ordinary vaginal syringe. The metro-peritonitis was accompanied with almost complete collapse, and attended with uncontrollable retching, by which the patient's life was kept in extreme jeopardy for several days. These symptoms were evidently caused by the injected fluid having passed through the patulous os into the cavity of the uterus, which was in a state of subinvolution at the time, and by the escape of a portion of it through the dilated Fallopian tube into the peritoneal cavity. However, the possibility of such an accident being produced by the use of the vaginal syringe is practically ignored by the majority of gynaecologists, and although similar cases are comparatively rare, yet the mere possibility of this occurrence in any case in which the syringe may be employed should render physicians more cautious than they generally are in this recommendation of this universally used, and, he would add, much abused instrument, the possible dangerous effects as well as the inconveniences and imperfections, together for a substitute for which he had brought under the consideration of the Society a couple of years previously.¹ The force with which fluid may be injected into the vagina, or even into the uterus by the common syringe may, as in the foregoing case, be so great as to occasion the most injurious effects, and in any case its action must necessarily be very imperfect. To produce any permanent benefit by injections in a case of inflammation or congestion of the cervix uteri for example, the injected fluid must be kept in contact with the inflamed part at a certain uniform temperature for a long time continuously, and this cannot possibly be accomplished with the ordinary syringe, as the fatigue of working that instrument is so great, and the position of the patient is so irksome during its use as to prevent its being employed for more than a few minutes at a time. To obviate these inconveniences various contrivances have been devised by gynaecologists. For his own part, Dr. More Madden preferred the improved utero-vaginal irrigator he had exhibited before the Obstetrical Society two years ago, and a drawing of which was published in the second volume of their proceedings. With that instrument the accident now under consideration could not possibly have occurred. This irrigator is very portable, can be readily used whenever a vessel of water is obtainable, and is capable of sending a gentle flow of water, plain or medicated, and at any temperature, into the vagina, or even into the uterus if ever that measure, which is very rarely required in gynaecological as distinguished from obstetric practice, should be considered expedient. And this, moreover, in any position, and for any length of time that may be advisable, and without causing the patient the slightest fatigue. The advantages of an irrigator over the awkward and imperfect vaginal syringe generally used, leads Dr. More Madden to recommend any gynaecologists who have not hitherto done so to give a fair trial to this simple, easily constructed and easily used instrument as a substitute for it in gynaecological practice. Cases such as that just reported were also, the author said, of interest in their bearing on the recent discussion as to the safety of strong astringent injection into the uterus in the treatment of *post-partum* hemorrhage. Against this practice it had been argued that there was danger of forcing the injected fluid through the open uterine sinuses into the circulation, and thus occasioning embolism, or of driving it through the Fallopian tubes into the abdominal cavity, and thus causing peritonitis. As on a former occasion when this question was under discussion in the Obstetrical Society, he, Dr. More Madden, had expressed an opinion as to the improbability of such an accident, he now felt bound to state that the foregoing case had somewhat modified his views on this point. For if metro-peritonitis could be excited by

¹ *Vide* Irish Hospital Gazette, vol. i. p. 223.

a fluid injected into the uterus five weeks after delivery, it was of course still more probable that the same effect might thus be occasioned immediately after delivery when the uterine vessels and passages were far more likely to be pervious. But the possibility of such an accident would not, in any degree, prevent him from again resorting to this remedy, the value of which he had learned by long experience, when necessary, that is to say in any urgent case of severe *post-partum* hemorrhage which could not be stopped by any other means.—*Irish Hospital Gazette*, March 1, 1875.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

52. *Poisoning by Chloral*.—Dr. CHOUPPE records a case of this. He observes that chloral was scarcely introduced, when large doses came to be administered with apparent innocuity. Thus, M. Martineau related a case of cancer of the ear, in which, for the relief of intolerable pain, he administered the enormous quantity of sixteen grammes in two hours; while M. Bourdon stated that in puerperal convulsions he often gave ten to twelve grammes; and M. Mialhe declared that he considered it almost impossible to kill an animal by chloral given by the mouth.

The following case, however, shows that large doses may be attended with great danger. Dr. Chouppe was called at midnight of January 12 to a gentleman, whom he found quite insensible, with stertorous breathing, a punctiform contracted pupil, irregular respiration, and a small, irregular pulse. The nature of the case was obscure until a bottle containing some remains of chloral was found. The patient's state became rapidly worse; the respiration became very slow, the pulse imperceptible at the wrist, and the movements of the heart scarcely audible, the trunk and limbs being covered with a cold and viscous sweat. By one o'clock all spontaneous respiration had ceased, and the heart could no longer be heard. Inductive electricity and artificial respiration had been resorted to, with little or no effect, when the reporter called to mind a case of poisoning by morphia, at New York, in which artificial respiration had been kept up for several hours by faradization of the diaphragm. One of the poles was passed over the track of the phrenic nerve, and the other over the insertions of the diaphragm, a thermometer placed in the rectum indicating a temperature of 30.2° C., being the lowest observed during the progress of the case. The application was continued for thirty-five or forty minutes, at the end of which time the patient respired spontaneously, although slowly and irregularly, while the radial pulse could be faintly felt, and the movements of the heart were rapid. The first sign of returning sensibility was a dilatation of the pupils during the passage of the current, this ceasing when the current was interrupted. Next followed some cries, and lastly a complete return of consciousness during the passage of the current, the patient then recognizing those around him. At three o'clock he fell into a calm sleep. His pulse was 80, strong, and regular; the respiration was regular and 20; and the rectal temperature rose to 37.4° . The sleep lasted until nine, the patient awaking reposed and unaware of what had occurred.

It seems the patient took the chloral for the first time because he slept badly; and the bottle whence he drank the solution was supposed to have contained from thirteen to fifteen grammes, of which he probably took a third. Very soon after he commenced feeling heavy, and undressed himself, after which time he recollected nothing.—*Med. Times and Gaz.*, Feb. 12, from *Gaz. Hebdomadaire*, Feb. 5, 1875.

53. *Atropia as an Antidote to Poisonous Mushrooms*.—Dr. T. LAUDER BRUNTON has a very interesting paper on this subject in the *Brit. Med. Journ.* for 14th Nov. 1874. He says that one of the most perfect instances of antagonism with which we are acquainted is the power of atropia to counteract the

poisonous principle of mushrooms. The active principle of the *Agaricus muscarius* or *Amanita muscaria* was separated by Prof. Schmiedeberg of Strasburg, and named by him muscarin. The merest trace of this alkaloid will arrest the pulsations of the frog's heart almost instantaneously; but if a minute quantity of atropia be brought into contact with the organ it will begin to pulsate again. A little atropia at once counteracts the effects of muscarin on the heart in mammals, just as it does in the frog. Brunton discovered that muscarin causes contraction of the pulmonary vessels, and so gives rise to the intense dyspnoea as characteristic of this poison. The dyspnoea, as well as the other symptoms of poisoning, disappear almost immediately after the injection of atropia.

In cases of poisoning by mushrooms, the stomach should be emptied first: and it is curious that in such cases tickling the fauces is much more efficacious in producing vomiting than the administration of tartar emetic. The antidote may be given by the mouth, either in the form of tincture of belladonna or liquor atropiæ; but Schmiedeberg and Koppe prefer subcutaneous injection, on account of the more rapid absorption and speedy action of the drug, as well as the more accurate adjustment of the dose. The dose for subcutaneous injection should be about one-hundredth of a grain, or about one minim of the liquor atropiæ sulphatis (B. P.), repeated, if necessary, until the dyspnoea is relieved.—*Ed. Med. Journ.*, Feb. 1875.

54. *Antagonism of Atropia and Morphia.*—Dr. COUZIER communicated to the *Société de Thérapeutique* a case of poisoning by atropia treated by enormous doses of morphia. A girl, aged 26, swallowed five centigrammes of sulphate of morphia. Furious delirium, aphonia, collapse, enormous dilation of the pupil followed. Dr. Couzier, in the course of a few hours, injected seventy centigrammes of the chlorhydrate of morphia. The next day the patient was out of danger.

M. DEJARDIN-BEAUMETZ considered that the belief in the antagonism of morphia and atropia was a grave therapeutical error; and what astonished him in the present case was that the patient did not die of a double poisoning. Prof. GUBLER somewhat agreed in this opinion, believing, however, that there is really an antagonism between the two substances, but that this is of no avail when the poisoning is considerable. Errors arise concerning poisoning by atropia, because ignorance prevails concerning the natural course of poisoning by this substance. Antagonistic powers are attributed to the remedy that is employed, because the patient gets well. This is an error, as the following case shows: An advocate liable to migraine, while at home and alone, took a dessert-spoonful of a mixture containing forty centigrammes of atropia in thirty grammes of water. On rising from his bed he stumbled, fell down, and remained unconscious until found by his servant next day. The day after the accident mydriasis was the only effect of it remaining. It is certain that had any remedy been administered, its antagonistic power, instead of the natural course of the poisoning, would have been adduced in explanation of the recovery. M. Gubler insisted on the great difference that there is between the effects of atropia taken by the mouth and those which result from its hypodermic injection. We may give two, three, four, or even ten milligrammes of the sulphate per diem in a mixture, without any marked physiological effects being produced, while in the same patient the injection of a single milligramme will give rise to enormous physiological effects. He is disposed to believe that this arises from the fact that atropia is remarkably unstable in presence of the ferments of the stomach. It is the same with aconitia. M. Paul did not doubt that poisoning by belladonna may be spontaneously recovered from; but still he believes that in his case the seventy centigrammes of morphia were administered with impunity in consequence of the presence of the atropia.—*Gazette Hebdom. de Med. et de Chir.*, Feb. 1875.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Explanatory Note in regard to the Diagnosis of Blood Stains. By JOS. G. RICHARDSON, M.D., Microscopist to the Pennsylvania Hospital.

In an article by Dr. J. J. Woodward, in the last issue of this Journal, elicited by my paper on Blood Stains published in the No. for July, 1874, it is stated that we can never "affirm truthfully on the strength of microscopical investigation that a given stain is positively composed of human blood." With this statement I fully agree, maintaining, however, that, whilst it is literally true, it is not the whole truth, because it often happens in practice, that *evidence other than microscopical*, narrows down the conditions of a case to the question: Is this stain human blood or that of an ox, pig, or sheep? The microscopist can then, in such cases, from fair specimens of blood spots, as ordinarily produced, affirm truthfully that "a given stain is positively composed of human blood," should it really be so, and this if doubted I can conclusively prove.

In respect to the *just* prominence which should be given to the circumstance that "the blood corpses of a few mammals approach so nearly in size to those of man as to render their distinction doubtful," a fact which I thus mention in my essay in this Journal for July, 1869, of which the paper of July, 1874, is a continuation (See also *Handbook of Med. Micros.*, p. 288), I think Dr. Woodward undervalues in the first place the prudence of our many medical brethren who possess microscopes without considering themselves experts; and, second, that he has overlooked in the calculation (which we both, perhaps equally, sought to make, of how to secure for humanity, by our researches, the greatest benefit with the least injury) one important factor, viz., the shrewd-witted lawyer, to be found in every country town, who would infallibly see that not one syllable of the carefully worded statements in my paper, supported any unqualified microscopist's claim to distinguish human from dog's or monkey's blood. Hence, trusting to this powerful element for the protection of the two or three innocent persons who might otherwise be endangered, I felt (honestly if mistakenly), whilst writing both my first paper and its continuation, that, should I more than indicate the animals which render our conclusions doubtful, my work might be utterly condemned as prejudicial to the interests of society, and myself perhaps compared (should I emphasize and reiterate the fact that science alone could not detect the falsehood of a criminal's story if he cunningly asserted that suspicious stains were made by the blood of a dog) to a toxicologist publishing a treatise, setting forth most faithfully the method by which poisoners may best destroy their victims with the least danger of detection in their crimes. Be it remembered also, that in all cases a really innocent person, wrongly accused of murder, on the ground of blood stains upon his clothing, etc., actually produced from that "constant" (yet rarely slaughtered) "companion of man," the dog, or from a seal, or otter, needs no microscopist to prompt him into

telling (and trying to confirm), *when first arrested*, the *true* origin of the suspicious blood spots.

These various considerations led me to publish my results in a guarded manner, but, now that all responsibility for harm has been removed, I am glad for the sake of the *few* who might draw erroneous inferences from my former papers, to say most emphatically, that I believe we cannot at present distinguish positively, in dried stains, between the blood corpuscles of man, and those of any mammal in which the disks measure on an average over $\frac{1}{4000}$ of an inch. Hence, therefore, until further discoveries are made, a microscopist's best efforts at revealing crime can only serve the cause of right and justice in those cases where the criminal's attorneys, in spite of being *forewarned* and consequently forearmed, fail to prepare or suborn testimony skilfully enough to convince the jury that some dog, rabbit, elephant, monkey, etc., has been killed, in such a way as to produce blood stains which are likely to be confounded with those of the murdered victim. That I was induced to avoid specifically stating this failure of our science by no unfounded apprehension of evil results, is *proved* by the fact that after my evidence was delivered in the Larabee trial at Franklin, Pa., the prisoner's counsel, a "shrewd-witted lawyer," in order to account for spots on the defendant's boots, brought two women into court who testified that the boots were sprinkled as they stood in a corner of the kitchen, by a puppy which jumped away from them just as they got one ear cut, and ran round the room shaking its bleeding head. Further to substantiate this tale, a dog with one ear clipped was shown to the jury, and sworn to as the very one from which the blood was shed. Fortunately, however, it so happened that I had examined two spots on the prisoner's pantaloons, finding them to be human blood, in contradistinction to pheasant's blood, as he first explained them to be, and since the contrivers of this dog story apparently forgot that the pantaloons were not standing up in the boots, to be sprinkled with them, their ingenious theory failed to gain credence with the jurors, who brought in a verdict of guilty. I venture however to predict that from this explanatory note, and the essay which made it necessary, will spring a host of bloody dog tales to account for suspicious stains on the clothing, etc., of murderers, until even attorneys for the defence become themselves ashamed to put forward this thin, worn-out plea.

In regard to the supposed greater accuracy of Carl Schmidt's observation, that dried and remoistened blood corpuscles shrink nearly one-half, I desire to add that I think it is chiefly accurate concerning specimens of *crenated* corpuscles, such as form when considerable quantities of blood undergo desiccation, and will be pleased at any time to demonstrate the general correctness of my measurements of the disks in the thin films of *true blood stains* (as emphatically distinguished from *masses* of dried blood).

DOMESTIC SUMMARY.

Tractile Method in Strangulated Hernia.—In our No. for April, 1874, we published an interesting article on this method by Dr. LEASURE. In the succeeding No. (July) will be found a case successfully treated in India by this plan. At a recent meeting of the *Société de Chirurgie* M. PERRIN (*Irish Hosp. Gaz.*, March 1, from *La France Médicale*, Nov. 14, 1874) communicated a

case of inguino-scrotal hernia, in which he had successfully resorted to this method. Taxis, under chloroform, had been tried without success by M. Gosse-
lin, and that distinguished surgeon was about to operate, when M. Perrin, who
had read the description of this method of reduction, proposed that it should
be tried. Accordingly, forty-six hours after the strangulation had occurred,
a hospital attendant took the patient up by his legs, and placing them over
his (the attendant's) shoulders, raised him up so that the patient's head and
shoulders rested upon the bed. In this position M. Perrin practised the taxis,
and the hernia was soon reduced to half its former size. The patient was re-
placed upon his bed, and the reduction was completed in the horizontal posi-
tion.

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On the Use of Nitrite of Amyl in various forms of Spasm, and on its Value as an Aid to Diagnosis.—Dr. S. WEIR MITCHELL, in an interesting communica-
tion to the College of Physicians of Philadelphia (Feb. 3, 1875), stated that for
more than a year he had been aware that nitrite of amyl would be a proper
means to use in epilepsy. It was clear to him that the nitrite caused, with
rapidity, fulness of the vessels of the whole head, and that near to the outset
of an attack of epilepsy there is a condition of vasal spasm. He hoped that he
would be able by the use of the nitrite to counteract this state of vascular
contraction, and so to break the chain of morbid phenomena, and thus end the
attack before its more disastrous consequences should follow. This reasonable
expectation was not disappointed. He was, of course, well aware that in most
cases of epilepsy there would be no time to secure the inhalation of enough of
nitrite of amyl to produce an effect, but he was also aware that in at least two
classes of epileptics the opportunity for its use would be given. There are rare
examples of epilepsy in which the warning of the coming on of an attack so far
precedes the spasm and loss of consciousness as to enable the patient to inhale
the nitrite. In other cases the patient has a succession of fits within a limited
space of time, and being then, of necessity, in bed, is so placed that a watchful
nurse may find time to use the nitrite.

Since experience has demonstrated to Dr. Mitchell the remarkable power of
this agent to check spasm, he has given it for that purpose a number of times,
its value being limited by the rarity of cases in which there is time to secure its
full inhalation. In some of his examples the chance of using it has been occa-
sional only, not all of the attacks affording the time needed to secure its value.
Dr. Mitchell stated that he had never seen nitrite of amyl fail in epilepsy
where there was time to use it. Last week he checked with it a fit coming on
in his office, and a few months ago had the chance of exhibiting to those present
at his clinic its capacity to stop for hours the convulsions of tubercular men-
ingitis in a child.

From what he has seen of this agent, it does not seem to possess, in most
cases, any capacity to lessen the probability of a return of the fits; but of its
power to arrest the actual convulsion there can be no doubt. He asked Dr.
William Jenks to test the nitrite in puerperal convulsions. His favourable
evidence as to this point still awaits confirmation by other observers.

Dr. Mitchell has not yet used it in forms of spasms from peripheral irritation
in children, but it would be, he should think, a safe and a ready agent. Neither
has it been as yet employed in the horrible convulsions of uræmia. Its in-
fluence over cases of hysterical angina is as well marked as in non-hysterical
attacks of this disorder. He has twice employed it in forms of disease which
are akin to angina, but lack a distinct name.

Dr. Mitchell speaks with rather more hesitation of the use of this agent as an
aid to the diagnosis of certain forms of cerebral disorder.

Those who see much of neural diseases meet very often with cases of head-
troubles in which there are attacks of vertigo, or disturbed equilibrium, or mere
sense of fulness with or without mental disorder. Occasionally these troubles
are plainly not epileptic. Sometimes they are either epileptic and distinctly
so, or else are the far-away beginnings of that malady. Sometimes a therapeutic
diagnosis is possible, and the mere fact of the bromides controlling them may,
when taken with the symptoms, clearly settle their nature. But very often our

suspicion is in favour of their being purely vascular disturbances of congestive type, and then he thinks that the nitrite of amyl may prove serviceable in settling the question; since in such cases the inhalation will sometimes recreate briefly the train of symptoms, so that they are at once recognized by the patient. This, when it occurs, is fairly conclusive as to the attacks having been truly congestive in character. The negative has also its value. Personally he has obtained useful help from this means, but he looks upon the whole matter as one which it is well to present to the profession as worthy of study, without at present claiming for it any very great utility.

Dr. Mitchell finds that physicians are very timid as to this remedy, but, after much and long use of it, he has altogether lost the dread of it with which he began. He would suggest that in syncope and in hysterical convulsions it might well repay a trial, and that possibly in the cerebral symptoms arising from shock it may also prove of value, and should be essayed in the cold stage of ague.

New Material for Fixed Dressings.—Dr. JOHN B. ROBERTS, in a report of a clinic at the Pennsylvania Hospital, states (*Philad. Med. Times.*, Feb. 13, 1875) that after experimenting with various kinds of fixed dressings, Dr. R. J. LEVIST "seems to have arrived at one which fulfils all requirements; being cleanly in its application, drying with sufficient rapidity, removable without difficulty, exceedingly light, and withal very cheap. The fixed material is ordinary glue, with which oxide of zinc has been incorporated, either by the manufacturer or by the surgeon at the time of using it, in order to cause it to harden rapidly.

"Several pieces of flannel—old blankets or worn-out underclothing answering the purpose admirably—are selected and cut the requisite size. One of these is laid around the limb, and the two edges are tightly stitched together along the anterior surface, allowing the edge to project above the seam; then the melted glue, with oxide of zinc, is painted upon this with a brush. The dressing may be strengthened by an additional layer of flannel or blanket saturated with the glue and oxide of zinc, and made to adhere to the underlying layer. A third or even a fourth layer may be thus applied, if it is deemed necessary, and the limb supported until the dressing dries, which requires from four to eight hours.

"The stitches of the seam on the front of the limb having been cut with scissors, the edges of this elastic case are sprung apart, and the dressing removed. The edges are then trimmed smooth, and a number of eyelets inserted, in order that the case may be laced like a shoe, and the degree of pressure regulated.

"This fixed fracture-apparatus is exceedingly light, is made from materials almost everywhere obtainable, and is much cheaper than the silicate dressing. There are at all times pieces of waste flannel or cloth about a large hospital which can be appropriated, while the glue and zinc could probably be supplied at a very low price per pound—a quantity sufficient for the manufacture of many such splints. Another advantage is its elasticity, which permits its removal without endangering the splint, for it can be pulled apart, and immediately springs into place around the limb to which it has been moulded.

"By a little care and dexterity in stitching on the layers of flannel, the surgeon can readily shape the dressing so that both the leg and the foot are completely encased."

Remedial Uses of Water.—The extremely valuable researches of Dr. James Currie on this subject, entitled *Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever and Febrile Diseases, whether applied to the Surface of the Body or used Internally*, have been latterly too generally overlooked, and Dr. AUSTIN FLINT has done a good work in calling (*American Practitioner*, January, 1875) attention to them. The edition of his Reports now before us bears the imprint of London, 1805, and is in two volumes. It is the fourth edition of Volume I. and the second edition of Volume II. The dedication to the first edition of Volume I. is dated Liverpool, 31st October, 1797. The fact that the first volume reached a fourth edition shows that the

work must have been popular in its day, and we have repeatedly referred to it as containing much that is put forth in latter days as new.

Dr. F. gives a very excellent and appreciative analysis of Dr. Currie's volumes, compares the views of the author with those of the advocates of this therapeutic measure in modern times, and finally presents the results of his own experience.

He states that he has had considerable experience in this mode of refrigeration at Bellevue Hospital, and he says it has proved more successful than any other treatment.

The internal use of water, as a remedial measure, irrespective of the action of cold, is worthy, Dr. F. thinks, of more attention than it has received. "A source of more or less benefit, derived often from the so-called mineral springs and artificial waters, seems to me to have been overlooked; namely, the usefulness of simple water ingested in considerable or large quantity." Undoubtedly much of the benefit which is received by those who drink mineral waters at the watering places is attributable to the change of scene, relaxation, the expectation of improved health, freedom from business and other cares, together with sanitary advantages pertaining to climate, regimen, and diet. But aside from these it is fair to attribute something, and perhaps not a little, to the drinking of the waters. It is evidence of this that mineral waters brought from the springs and those artificially prepared are often beneficial to those who remain at home. That the benefit may be due, measurably or chiefly, to the water and not to the medicinal constituents is shown by the fact that some waters supposed to possess extraordinary remedial potency have no medicinal constituents. The Missisquoi water, a few years since was famous for the cure of cancerous and other affections, was analyzed by Squibb, and found to be only remarkably pure water. In not a few of the waters which have acquired a popular repute the saline ingredients are either without effect or their effect must be insignificant; pure water substituted would do quite as well, if not better. If this be so, it is well to consider if medical practice might not with advantage avail itself more than is now done of the remedial agency of the internal use of water. And in connection with this topic the importance of the purity of water suggests itself, to which I allude merely to raise the inquiry whether the introduction of distilled water for drinking and culinary purposes might not be a wiser measure in both a sanitary and a therapeutical point of view. In this essay I can do no more than to raise the inquiry." In cases of renal disease Dr. F. adds his testimony to the efficacy of water used internally as sometimes proving a potential remedy.

Injections of Tincture of Iodine into the Cavity of the Uterus in Hemorrhage after Delivery.—The *Am. Journ. of Obstetrics*, Feb. 1875) contains an interesting article on this subject by Dr. JAMES D. TRASK. After referring to the diversity of sentiment entertained as to the safety of injections of the solution of the perchloride of iron in *post-partum* hemorrhages, he ascribes to Dr. DUPERRIS, of Havana, the credit of first employing injections of tincture of iodine for that purpose (see *N. A. Medico-Chirurg. Review*, vol. i., Philad., 1857). The mode in which all the remedies act which are ordinarily employed for checking uterine hemorrhage, Dr. Trask considers to be essentially the same, viz., by stimulating the muscles of the womb to contraction, causing compression of the bloodvessels and cessation of the flow. The styptic preparations of iron he considers to act mainly in this manner, as does also the tincture of iodine; he regards the latter, however, as the safer application. "In comparison," he says, "with iron, tincture of iodine has the advantage, so far as we now know, of being perfectly safe; at any rate, free from the evils incident to the employment of iron. Besides this we have the direct antiseptic influence of the iodine upon the uterine and vaginal mucous membrane. The application of iodine to the lining membrane of the uterus is, probably, of all things the surest means of counteracting a tendency to absorption of septic matter into the system after delivery. Since adopting the practice of injecting tr. iodine after operations upon the interior of the uterus, Dr. Emmet has not encountered a single case of septicæmia. As contrasted with the salts of iron in this

respect, it would seem as if there could be no room for hesitation in the choice. From the local action of iodine not only is nothing to be feared, but even advantage to be anticipated, while from the local action of iron much may be apprehended. As an excito-motor agent, iodine is probably at least equally good, while incapable of causing the formation of thrombi in the uterine vessels. In view of these facts one would feel justified in resorting to the iodine earlier than to the iron, and in this respect also an advantage may be gained for the patient, since the use of iron is expressly limited to cases deemed hopeless under ordinary management."

The following is a brief summary of what Dr. Trask seeks to show in this paper:—

"1. That a very considerable proportion of cases in which the injection of salts of iron has apparently saved life, have been those in which it accomplished this end not in virtue of its local styptic action, but because of its power to excite reflex action when cold, friction, pressure, etc., have failed.

"2. That when it produces coagulation of blood in the orifices of the blood-vessels there is danger that the coagulation may follow the vessels into the substance of the uterus, producing dangerous thrombi, and that the blood already collected in the cavity of the uterus also may become converted into a hard, intractable coagulum which the uterus cannot expel, and which may, after a few days, decompose and give rise to septicæmia.

"3. That there is evidence for believing that as an excitor of dormant reflex action, tinct. iodine may be substituted for the iron with positive advantage, from its efficiency as an excitor and from its antiseptic properties.

"If these points are established, the use of iron salts in a solution sufficiently strong to induce coagulation of blood in the uterine vessels should, at any rate, not be resorted to until tinct. iodine has been tried and failed.

"In conclusion, I would distinctly disavow the position of claiming positively for iodine a superiority over the iron. More facts are needed to warrant this. I have simply sought to present the considerations that render it extremely probable that the one will be found an advantageous substitute for the other, when it shall have received at the hands of the profession a sufficient trial."

Motor Centres in the Cerebral Convolutions.—The *New York Medical Journal* for March, contains the report of a committee of the New York Society of Neurology and Electrology, consisting of Drs. J. C. Dalton, J. W. S. Arnold, Geo. M. Beard, A. Flint, Jr., and John M. Mason, on the above subject.

The observations of the Committee confirm the most important of the results obtained by Hitzig and those who have followed him in this line of experiment.

"There is no doubt," the Committee say, "that there are certain limited spots upon the surface of the cerebral convolutions which, when subjected, in the etherized animal, to a weak galvanic current, will cause distinct momentary contraction of separate muscles, or groups of muscles, on the opposite side of the body.

"The same galvanic stimulus, applied to other points, not more than five millimetres distant, will be entirely without effect; and, when reapplied to the former spot, will again produce the same contractions as before.

"The number of the repetitions of particular contractions following galvanization of particular points leaves no question as to the reality of the connection between them.

"In repeated instances, corresponding points upon the right and left sides of the brain act experimentally as centres of motion for similar groups of muscles on the left and right sides of the body. We cannot say that in all cases this bilateral correspondence of the cerebral centres of motion is complete; although it may be so in reality, since the two sides of the brain in the dog are never exactly symmetrical, as regards either the fissures or the convolutions.

"The action of the cerebral convolutions in producing muscular contraction, when this contraction is definite and limited, is always a crossed action; galvanization of the convolutions on either side of the brain exciting movement in the muscles, both of the limbs and face, on the opposite side of the body.

"Galvanization of the dura mater, or other sensitive parts, produces, on the contrary, by reflex action, muscular twitchings on the same side of the body.

"This is especially illustrated in Experiment No. III., where, the dura mater being exposed but unopened, application of the electrodes to its exterior surface produced, twenty-four times, muscular twitchings on the corresponding sides only; namely ten times on the left, and fourteen times on the right.

"But, after the dura mater had been removed, application of the electrodes to the surface of the convolutions, in the same experiment, produced, thirty-two times, distinct muscular contraction on the opposite side of the body alone; while once only it was followed by a slight contraction on the same side.

"In the same experiment, application of the electrodes to a small part of the dura mater left at a corner of the wound produced a distinct depression of the shoulder on the same side, while their application to the cerebral surface immediately adjacent was without effect; this result being obtained invariably in twenty applications, made alternately to the dura mater and to the brain.

"If we compare the total results of all the experiments, the preponderance of crossed action in galvanization of the brain becomes very manifest. Fifteen different points of the cerebral surface, when galvanized, excited distinct movement on the opposite side of the body one hundred and sixty-nine times; two points excited slight movements on the same side with themselves four times only.

"Among these instances is not counted that of a special point which usually excited a flexion of the head and neck in the median line; both sets of the muscles, right and left, being either called into action harmoniously, or else each one having the power to flex the head without deviating it toward the opposite side.

"All the centres of motion for the anterior and posterior limbs are situated in the convolution immediately surrounding the frontal fissure. This fissure, which is well marked in the dog and other carnivorous animals, is a nearly transverse furrow running outward from the great longitudinal fissure, and situated at about the junction of the middle and anterior thirds of the brain, as viewed from above. The centres for flexion and extension of the anterior and posterior limbs the Committee have always found in the external part of the præ-frontal convolution, just anterior to this fissure, and in the post-frontal convolution just behind it. In a majority of cases those for the anterior limbs were situated more in front, near the outer extremity of the frontal fissure, and those for the posterior limbs more posteriorly and inward, but their exact position varied somewhat in different cases. The centre for flexion of the head and neck in the median line is in the lateral and anterior part of the præ-frontal convolution, where it bends downward and outward; that for flexion of the head with rotation toward the side of the stimulus is in a part of the convolution situated still further toward the front and downward, so as to be invisible in a view of the brain taken from above. The centre for the facial muscles is in a region situated on the lateral part of the hemisphere, immediately about the supra-Sylvian fissure.

"These localities, as found by the Committee, correspond in nearly all essential particulars with those given by Hitzig, and in some instances their identity was complete. This fact is of much value as testifying to the genuineness of the results in both cases—since the spots experimentally found to be centres of motion were all marked, as above stated, by the insertion of needles before killing the animal; but their location upon the hemispheres, and consequently their correspondence with those discovered by Hitzig, could never be seen until after the brain had been removed from the cranium.

"With regard to the separate points for flexion and extension of the anterior and posterior limbs respectively, the Committee are unable to fix these points more precisely from the results of their experiments. In some cases they varied in position more or less in different animals; and in some a single application of the electrodes would produce movement in more than one set of muscles. It is not possible, therefore, for the Committee to indicate an exact or invariable locality for the centres of motion, by reference to the fissures or convolutions; but they are led to the conclusion that these centres exist, and

that, when the galvanization happens to be applied only to the spot which they occupy, they will produce movements peculiar to themselves.

"Thus, in the experiments detailed above, sixty-four applications of the electrodes produced flexion in one limb only, and fourteen applications produced extension in one limb only; making seventy-eight isolated movements. In twelve cases there was flexion or extension of both limbs simultaneously, and in eleven cases flexion of one limb, accompanied by extension of the other; making in all twenty-three double movements of the limbs. That is, more than three-quarters of all these movements were isolated movements of flexion or extension of a single limb.

"It is evident that a variety of circumstances influence the results of galvanizing the cerebral convolutions. On several occasions the contractions produced in an opposite limb seemed to increase in intensity with the repetition of the stimulus at short intervals. A deeply etherized condition of the animal, on the other hand, will sometimes suspend altogether the phenomena of movement, which were well marked a short time before; and these phenomena may reappear after an interval of repose.

"A weak galvanic current from eight cells, applied to a particular spot, may cause distinct movement in one of the opposite limbs only; while a stronger current from sixteen cells, applied to the same spot, may produce a confused motion in all the limbs at once."

Utero-Gastrotomy.—Dr. J. MARION SIMS, of New York, made some very interesting remarks on this subject at the recent meeting of the New York State Medical Society (*Medical Record*, Feb. 15, 1875). He said, that, having had the honour of reading a paper at the last annual meeting on the removal of intra-uterine fibroids by enucleation, he now proposed to speak of the removal of larger uterine fibroids by abdominal section, whether intra-uterine, interstitial, or extra-uterine in character. This operation is now on its trial. It stands where ovariectomy did twenty years ago. It has the same opposition to encounter, and will doubtless achieve the same victory. In this country it has been performed successfully by Kimball, Burnham, Boyd, Storer, Darby; in England by Charles Clay, Fletcher, and very recently by Lawson Tait. Kœberle, of Strasbourg, has cured four out of six cases, while Péan, of Paris, gives us the minute histories of eleven cases, with seven cures, and since the publication of his work, his pupil Urdi has published a work in which he says, that the whole number of Péan's operations up to the present time is twenty, with fifteen cures.

Dr. Sims has recently operated twice for the removal of the uterus, with large fibroid, by abdominal section. The first case was in a feeble state from excessive loss of blood. During the separation of a large fold of intestine from the surface of the tumour, the capsule of the tumour was torn up, large venous sinuses were opened, and the patient suddenly lost about sixteen ounces of blood. She never rallied, and died from the shock and loss of blood in thirty-five or forty minutes after the operation.

The second case had lost large quantities of blood and was quite anæmic, but was thought to be a favourable case for operation. It was done on the 19th of November, according to Péan's method. The patient died in seventy-six hours, of septicæmia. Examination, post-mortem, showed the pedicle in a sloughing condition below the wire clamp; the slough extending along the line of incision in the abdominal parietes, and on the top of the bladder, and in the broad ligaments. There were eighteen ounces of bloody serum in the peritoneal cavity. Péan's method of operating is to make a pedicle of the supra-vaginal portion of the cervix, and to draw this out through the lower edge of the abdominal section by clamp, as in ovariectomy. He transfixes the cervix by a double wire, ties one on each side of the cervix, inclosing the broad ligament on its respective side in the wire. Dr. Sims employed Péan's method in both his cases, but would not use it again; but he advocates the use of the actual cautery. He exhibited a clamp *écraseur* on the principle of Nott's [and Isaac E. Taylor's], by which he would compress the broad ligament on one side near the body of the uterus, and then sever the ligament with the cautery down to

its junction with the cervix. The same method is to be followed on the side, and then it only remains to cut the tumour from the supra-vaginal cervix and cauterize the surface. The several cauterized portions are then dropped into the peritoneal cavity, when, in spite of the eschar, they unite at once by adhesive inflammation to the surfaces with which they lie in contact.

Dr. Sims then exhibited an automatic alcohol blowpipe for heating the caustery irons.

Dr. E. M. Moore, of Rochester, said his views with regard to operations which required the opening of the abdominal cavity had, for several years, been undergoing considerable change, and there seems to be some truth in the idea that it may be as safe or safer to perform gastrotomy for uterine than for ovarian tumours, owing to the adhesions which are so likely to exist in the latter case.

While it is no trifling matter, or an operation to be done without good and urgent occasion, surgeons have to a great extent got over the fear of opening this cavity. A large number of the unfavourable results are undoubtedly from septicæmia. Since Kimball, of Lowell, performed the first operation of this character, this procedure has probably been resorted to more often than the profession were aware. In the case of Dr. Kimball the patient recovered. Last summer Dr. Moore said he had a case of uterine fibroid on which he operated successfully, in which the tumour weighed seventeen pounds. The operation was a modification of the one introduced by Prof. Miner, of Buffalo, in cases of ovariectomy, and called by him ovariectomy by enucleation.¹ In this case a pedicle was created by separating a portion of the serous membrane from the surface of the uterus and tumour and bringing it into the abdominal wound, where it was retained, as in ovariectomy, and formed a cup which received the blood which might escape, and the discharges, and thus prevented their entrance into the abdominal cavity.

Professor E. R. PEASLEE, of New York, called attention to some points in Dr. Sims' remarks. His own experience with this operation commenced one week after Dr. Kimball made his operation. The success or failure of the operation would depend upon a variety of causes, and was at best, even in the opinion of Dr. Sims, a dangerous one. Péan does not operate indiscriminately, but he has operated in a case of fibrocystic tumour even when the woman was nearly exhausted, and in some cases of fibroma with ascites, even when the patient was nearly moribund. Dr. Peaslee had seen but two cases in which he thought the operation was advisable, but did not wish to be understood as opposing it. He was perfectly willing to undertake it when the indications were fulfilled.

Case of Traumatic Epilepsy greatly benefited from Operation.—Mr. Cline, it is well known, cured two cases of epilepsy resulting from injury to the head, by the use of the trephine; and the late Professor DUDLEY, of Lexington, Ky., reported (*Transylvania Journ. Med.*, vol. i., 1828; see also *Am. Journ. Med. Sci.*, vol. ii. p. 489, 1828) three cases of epilepsy arising from the same cause successfully treated by the same operation. More recently Dr. JOHN T. DARBY communicated to the New York Neurological Society (*Psychological and Medico-Legal Journal*, Feb. 1875) another case greatly benefited by the same treatment. In this instance the manifestation of epileptiform convulsions occurred *ten years* after the injury (a kick on the head by a mule), and the operation for relief was performed in the *thirteenth year* succeeding the accident. Several similar cases were related by members during the discussion of Dr. Darby's paper.

Salicylic Acid.—Dr. EDWARD R. SQUIBB read before the Medical Society of New York (Feb. 2, 1875) a highly interesting note on this article, in which he gives an outline of its history, and offers some thoughts in regard to its sphere

¹ See American Journal of the Medical Sciences, October, 1872, p. 391, and Buffalo Medical and Surgical Journal of June, 1869.

in medicine. This latter will most interest our readers, and we extract the following observations relating to its practical application.

"It is used for medical and surgical purposes either dry or in solution. When used dry it is sprinkled on to wounds, ulcers, or dressings in the form of very fine powder, in very small quantities, either simply powdered, or mixed in various proportions with some diluent such as starch. When used in simple solutions either for spraying surfaces, or for washes or gargles, it is used in tepid solution of about one part to three hundred parts of water. Where stronger solutions are required for washes, gargles, or to moisten dressings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have been used. When applied to wounds it appears immediately in the urine.¹

"Its alleged advantages over all other antiseptics are: First, that it is far more powerful and effective in smaller quantities; and secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not caustic nor corrosive in any quantity, and never produces inflammation. In large quantities it may be irritant and painful, but yet rarely surpasses a stimulant effect, while it appears to be quite neutral in the very small quantities which are yet thoroughly effective. Thirdly, it is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics or antiferments. These processes are of two kinds, namely—vital, or those in which living organisms have an important part, such as that produced by yeast and many of those which occur in putrefaction; and chemical, or those which occur independent of vitality, as the production of the volatile oils in mustard and bitter almonds, the effect of diastase, etc. Now, while carbolic acid and other antiferments are azymotic, or completely arrest or prevent fermentations of the first kind, they are powerless with the chemical processes. Salicylic acid is said to be more effective with the vital ferments, and equally effective with the chemical.

"Fourthly, in quantities said to be thoroughly effective, it is entirely odourless, and tasteless, and harmless, whilst it has no poisonous effect in any reasonable quantity.

"It prevents or arrests the souring of worts, washes, and beers of the brewers; and prevents or arrests the putrefactive agencies which are so troublesome and destructive to the glue manufacturers; and these and similar trades have thus far seemed to be its principal consumers. Separate portions of fresh milk set aside to become sour, one to which 0.04 per cent. of salicylic acid was added soured thirty-six hours later than the other. Urine thus protected was on the third day still clear, and free from ammoniacal odour.

"Varying proportions of the acid added to accurately measured separate portions of sweet milk, and these carefully observed afterwards until they sour—or, by the use of meat juice instead of milk, observed closely for signs of putrefaction—would offer good indications of the quantities required to arrest these varieties of fermentation.

"Professor Thiersch, of Leipsic,² used it upon contused and incised wounds, and in operations, with excellent general results, destroying the fetid odour of cancerous surfaces, and pyæmic ulcerations. To such uses this writer would add the suggestion that for washing out the cavities of the abdomen and chest after those operations which tend so strongly to septicæmia, solutions of salicylic acid would seem to offer very great advantages should it prove to be as bland and unirritating as it is stated to be, and yet so effective.

"Most of these statements are summed up from the periodical literature of continental Europe during the past six months, little having appeared upon the subject in Great Britain, or in this country, and nothing having been done with it so far as known in either country.

"In occasional paragraphs and allusions benzoic acid has been coupled with salicylic acid as being only second to it in effectiveness as an antiferment, and with similar advantages.

"These statements are collated and condensed here as being well worth

¹ Thiersch, Pharm. Centralhalle, Oct. 22, Nov. 5.

² Pharm. Centralhalle, Nos. 44 and 45, 1874.

attention in themselves, and in their relations to the phenomena of septic poisoning as already known. But they have a new significance, or at least suggest to this writer a new train of thought when viewed in connection with some researches now in progress and but just appearing in the periodical literature.

"Experiments¹ were made upon animals by the injection of measured quantities of septic blood. The blood of a healthy animal was allowed to become putrid. Increasing doses of this were injected into healthy animals until the amount necessary to cause death was ascertained. This quantity proved to be large, the animals recovering from all the small doses. Blood from the animal whose death was caused by injections of putrid blood was injected by increasing doses into healthy animals until the fatal dose was reached, and this dose was found to be smaller than that which killed the first animal. The blood of the second dead animal was used on healthy subjects in the same way as that of the first, and proved fatal in still smaller quantity. The experiments were continued upon the same plan until finally a point was reached when a very minute portion—the fraction of a drop perhaps—from the last animal proved fatal to the next, with more violent toxic symptoms and a shorter course. The important indications of this series of experiments is, of course, the rapid accumulation of potency in septic poisoning. And the question put by this indication is not only as to how this potency accumulates, but also how to prevent and arrest it. Metro-peritonitis, and common pyæmia would doubtless, unobstructed, accumulate potency in the same way without visible inoculation, and often do continue and accumulate even against the vigorous application of the best means of prevention yet known. No hypothesis can be constructed that will embrace the phenomena of septic poisoning as they are now rapidly being investigated without including zymotic diseases and the cachexiæ, and none will account for the phenomena already observed without bringing it within the sphere of what is called, in some of its degrees or phases, fermentation. Hence, if the medical art is to keep pace with the progress of the physical sciences, physicians cannot afford to pass by such articles as salicylic and benzoic acids when offered by chemistry, without investigating their effects upon disease, even though not one out of ten should repay the labour of investigation, for it is certainly in this direction of research that medicine must look with greatest hope of success to control those abnormal vital processes which so far may be modified, but not stopped. For example: Suppose a primary syphilitic or cancerous sore, or a diphtheritic patch, or even a cachectic pulmonary infarction, while these are merely the localized phenomena of an external inoculation, or of an internal taint—they must all be considered to partake of the nature of a fermentation, and by some such process invade the whole organism. Then suppose an antiferment, which when applied to any surface not covered by an impervious cuticle very soon appears unchanged, first in the blood and then in the secretions and excretions—the manifest logical antagonism of such substance to the diseased conditions becomes too important to be neglected, and the counsels of wisdom demand that its claims to such antagonism be disproved before it be dismissed. The question as to what may become of the cancer-cell, or of the less tangible precedent cause of it, or of the bacteria, or the precedent conditions which increase their fertility, under the well-directed influence of this class of agents, is, perhaps, the most important one in all medical science. And just in proportion as accurate research develops agents of greater and greater power, will be the prospect of better success in treatment.

"The phenols, especially the so-called carbolic and cresylic acids (phenol and cresol), were, and must always remain to be, most important additions to this class of agents, surpassing in power all that had been previously tried. And if now salicylic acid shall prove more potent than the phenols, the further gain will be very great, and the researches upon it will again lead up toward future discoveries of still greater power."

¹ Bergman, Panum, Davaine, Vulpian, and Bouley—the latter researches in *Bulletin de l'Acad. de Méd.*, 1872, 1873, and Davaine, translated by Mary C. Putnam, M.D., in *Archives of Scientific and Practical Medicine*, by C. E. Brown-Séquard and E. C. Seguin, No. 5, p. 469.

Experiments on the Laryngeal Nerves and Muscles of Respiration, etc., on a Criminal Executed by Hanging.—Dr. W. W. KEEN read to the College of Physicians, of Philadelphia (Feb. 3, 1875), an account of these experiments.

Dr. George Johnson had expressed the belief that while pressure on one recurrent nerve will cause direct unilateral palsy of the larynx, but not bilateral spasm or palsy, pressure on the vagus involving its afferent fibres may cause both. The reason of this he supposes to be that the nerve-nuclei of both sides are so connected that each possesses bilateral activity. Dr. Mitchell having suggested the probability of a chiasm of the minuter fibres of the recurrents in man, which, though not demonstrated anatomically, might be proved physiologically, the following experiments were undertaken upon a criminal recently executed by hanging. After hanging about half an hour, the body of the criminal was cut down, and immediately examined. The left vagus and recurrent laryngeal were dissected as low down as possible in the neck, and the vocal cords examined while the nerves were excited by electricity. Repeated faradization with weak and strong currents, and galvanization with from four cells up to forty, of the recurrent and also of the vagus, produced decided movements of the left cord only, and none of the right. The wires were applied directly to each nerve, and the irritating action of a tumour simulated as nearly as possible. Careful dissection showed that in all probability none of the fibres of the vagus were injured. The definite conclusion to be drawn from the experiment is that no chiasm of the inferior laryngeal nerves exists. No reflex motion was observed in the larynx, although the absence of this may have been due to violence done the parts by hanging.

Experiments upon the muscles of respiration were then undertaken. The left phrenic, having been insulated, was excited as in the previous experiments, but without result; no movements whatever of the chest were produced, nor was greater success obtained by one wire applied to the nerve while the border of the diaphragm was followed with a sponge, nor when both sponges were applied to the diaphragm.

The intercostals were then examined. Having been exposed from the median line to the line of the axilla, the interrupted current was applied to the intercartilaginous portion of the internal intercostals by means of small sponges, when it was found that they all raised the cartilage below them. The external intercostals were then faradized, when the upper rib was pulled down very markedly, while the lower one was just perceptibly raised; the movement increased from the first to the seventh, the last four not being examined. These experiments seemed to point to the conclusion that the internal intercostals are inspirators, and the external expirators.

The muscles of the face still retained their electro-muscular contractility; but one was examined carefully, the pyramidalis nasi, which appeared as a result of the electrical excitation to act as the direct antagonistic of the central portion of the occipito-frontal. Dr. Keen pointed out, in conclusion, the important results which this new method of investigation—the faradization of the muscles on the recently dead—promises to yield.—*Phila. Med. Times*, March 20, 1875.

Exstrophy of the Bladder.—An operation for this malformation was recently performed by Dr. CHEEVER, at the Boston City Hospital. The patient was a boy, six months old, well developed, and healthy. The opening through the abdominal walls is an inch above the pubes on the median line, and is about half an inch in diameter. When the child cries or strains, there protrudes from this aperture a bright red, velvety tumour, nearly an inch in diameter. A catheter passed into the bladder through the urethra finds an exit through the abdominal opening, and about half of the urine also comes out of the same opening. There is no umbilicus, nor scar indicating the remains of one. The penis is normal, the urethra terminates normally, without hypospadias, and both testicles are in the scrotum. The folds of skin in the groin usually seen in these cases are full and large. There is no hernia, nor any other deformity, except the one above described. Dr. Cheever dissected up the skin from the entire circumference of the orifice, and joined the freshened edges with six silver sutures on the median line. The opening was thus effectually closed.—*Boston Med. and Surg. Journ.*, Feb. 11, 1875.

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